The Cryptozoology Review

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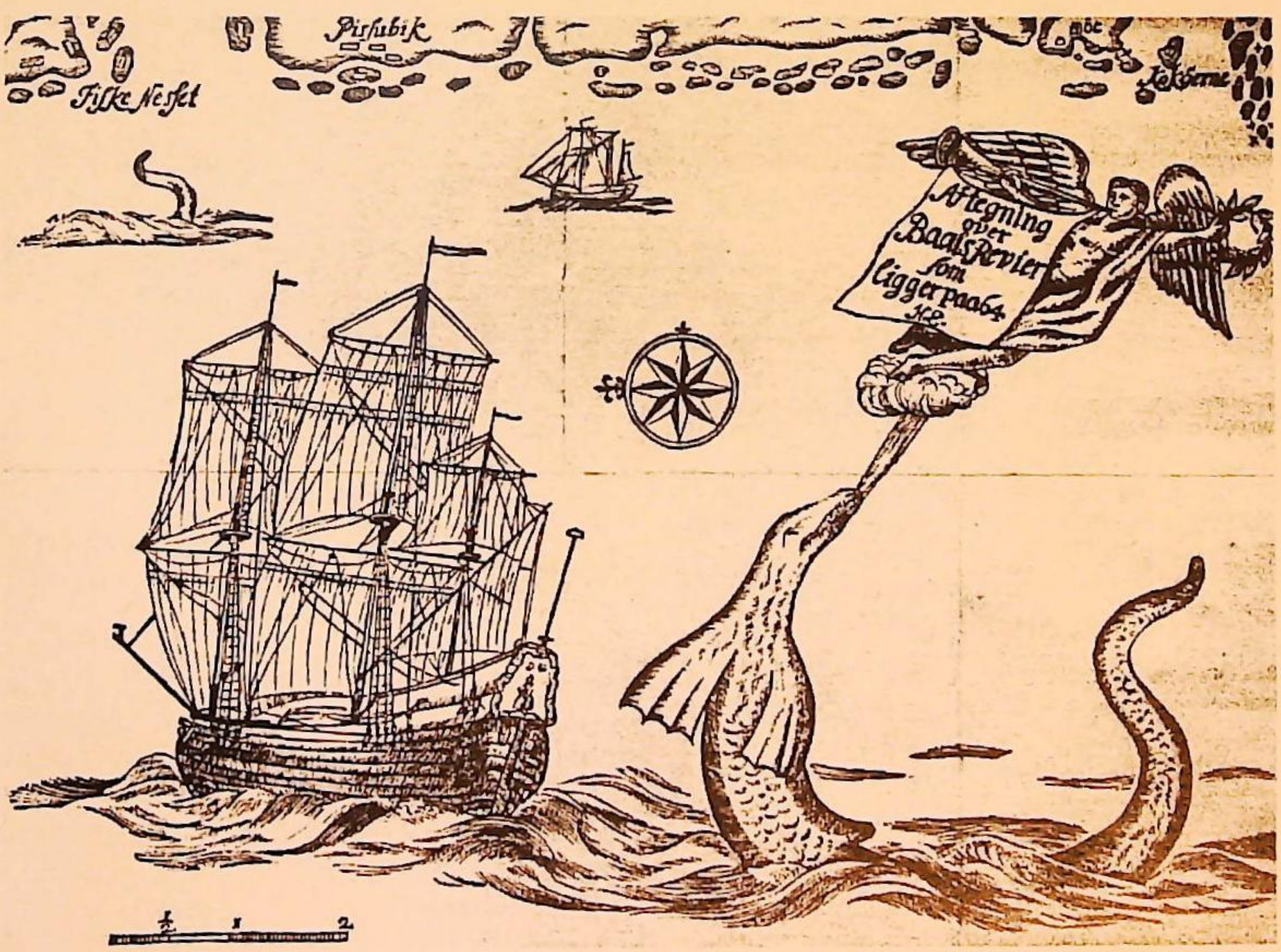

Editorial

This is the last issue of *The Cryptozoology Review*. Its appearance over four years late is symptomatic of our reasons to end publication of *TCR*. With the university- and research-related commitments that we now both have, it is impossible to regularly publish *TCR*. If you are owed further issues, please find a letter enclosed outlining how you can redeem these for back issues or a refund. We thank all of our subscribers past and present for their support, and we wish the best of luck to our colleagues in their future endeavours.

The end of *TCR* causes us to reflect on cryptozoology. We love the mysteries of cryptozoology and the quest to solve or at least shed light on them by tromping through the field or the library, but we detest the overzealous, credulous, and often uncritical methods of many of its practitioners. Quite the opposite approach should be taken in cryptozoology; the varied, cosmopolitan, and often vague nature of the available evidence, and the consequent susceptibility to hoaxes and human misinterpretation, absolutely demands a critical approach unswayed by rampant speculation. The stories about a strange creature called mokele-mbembe from the tropical forests of west Africa, for example, are interesting and may indicate that a large undescribed species actually is responsible. However, the available evidence certainly does not warrant its identification as a sauropod dinosaur, just because some eyewitnesses say it has a long neck and certain other vaguely dinosaurian attributes. The sauropod identity is particularly unlikely considering that a large amount of scientific evidence—which has been carefully and systematically obtained, debated, and finally accepted—supports the extinction of all dinosaurs except birds 65 million years ago. Although cryptozoologists like to complain about how little respect they get from mainstream scientists, arguably they have gotten no less than they deserve.

Despite the best intentions of cryptozoologists, the field is at best a very soft science due to its lack of solid, reliable evidence and its nonexperimental nature, even when it is not marred by credulity and intellectual irresponsibility. Perhaps cryptozoology is best thought of as natural history, and this still may be generous because even the backyard naturalist has a better collection of physical remains. Cryptozoologists may dispute this idea, despite their common self-congratulatory claim that cryptozoology harkens back to the romantic Victorian era—when most zoology was natural history! Even if cryptozoology is "merely" natural history, common sense and scientific principles must prevail.

The basic premises of cryptozoology—that there are still undiscovered animals out there, that some of them are large or otherwise notable, and that it is sensible to try to discover these animals by analyzing whatever evidence for them may already exist—seem incontrovertible. New species are regularly discovered, and in many cases there was previously available evidence that could have alerted researchers to their existence. This is accepted even by the much-maligned "conventional zoologists."

Cryptozoologists, however, have had little success in predicting these animals. Although it has been nearly fifty years since Bernard Heuvelmans, a titanic figure whose recent death we note with sadness, published *Sur la Piste des Bêtes Ignorées*, none of his unknown animals have entered standard zoology books. Lists of cryptids now include hundreds of supposed creatures, but when a genuine new animal is discovered—no matter how extraordinary—very rarely has it been previously mentioned in the cryptozoological literature. Nor have cryptozoologists had much success in deciding which of their hypothetical animals do not exist; some will continue to loudly advocate the existence of a cryptid, even after the evidence supporting it has been convincingly debunked by others. Heuvelmans no doubt intended for cryptozoology to help rescue unknown animals from a temporary state of uncertainty; but instead of travelling a brief path to discovery, they seem doomed to an unending road to nowhere.

It is because of our aforementioned criticisms of the field that we are wary when some cryptozoologists suggest that their subject is a good way by which children can be introduced to the wonders of science. Although this is a commendable goal, we question whether cryptozoology should play this role. Consider again that certain ideas promulgamated by cryptozoologists run counter to scientific hypotheses supported by well-established evidence. Likewise, should we be telling children that eyewitness testimony and other inadequate forms of evidence are sufficient for proper scientific inquiry? The critical and careful approach of science is sadly missing from much of cryptozoology, and until the field becomes more cautious, we think molecules, galaxies, evolution, and known animals should suffice to garner the interest of children and adults alike. As Richard Dawkins states in *Unweaving the Rainbow*, science is wonderful, mysterious, and remarkable enough without having to resort to monsters, aliens, and other unconfirmed phenomena.

It is important to emphasize that we are not throwing cryptozoology out the window. Rather, we are pleading for more cautious consideration of the evidence. Achieving this could cut down greatly upon unwarranted visions of living dinosaurs and other fantastic beasts dancing through the heads of cryptozoologists. Perhaps then cryptozoology would finally achieve what it was originally supposed to do: assist in the discovery of new animals.

– Ben S. Roesch and John L. Moore

A Compendium of Cryptids

("All the latest cryptozoology news fit to print")

by Ben S. Roesch and John L. Moore

Hyenas and the Nandi Bear

On August 19, 2002, a mysterious animal that had been terrorizing villagers in Dowa, Malawi, was killed after a four-day pursuit by local hunters. The animal had appeared in the village area on August 8, and was responsible for killing one person and wounding 18 others. Dowa District Commissioner Charles Kalemba said the animal was hyena-like, but "a hyena has shorter hind legs [and] this animal has legs which are the same length. It has hyena fur in some parts of its body but it has fur like that of a wild pig in other parts. In fact it has also got a bigger and wider tail with lots of fur compared to that of a hyena." Humphrey Nzima, deputy director for Parks and Wildlife in Lilongwe, reported that "some people say it is a human creation, others say it is a resurrected human being." Nzima said "preliminary assessments based on footprints indicated that it might be a lion," and dispatched officers to Dowa to identify the animal. To a cryptozoologist, the description of the animal and its ferocious demeanor might recall the Nandi bear, the name given by English settlers to a large hyena- or bear-like animal that was held responsible for many attacks on people and livestock in East Africa, especially in the first half of the 20th century, and was known by many different local names, depending on the region (Heuvelmans 1959). Although many sightings and attacks were likely due to various known animals such as ratels (*Mellivora capensis*), aardvarks (*Orycteropus afer*), and hyenas, many cryptozoologists maintain that at least one unknown creature is responsible for the Nandi bear. Suggestions of its identity include living representatives of a giant prehistoric baboon, a giant prehistoric hyena, or a chalicothere, a large herbivorous perissodactyl that may have had some resemblance to a hyena and which appeared in the Eocene and survived in Africa until the Pleistocene (Fig. 1) (Shuker 1995).

Unfortunately, the Dowa creature turned out to be exactly what it looked like—a hyena. The animal, identified as a female spotted hyena (*Crocuta crocuta*) (Fig. 1) by Parks and Wildlife officers, was apparently suffering from starvation, perhaps explaining

Figure 1. A chalicothere (left) and a spotted hyena (*Crocuta crocuta*) (right). The animals are not to scale: fully-grown spotted hyenas are over 1 m (3.5 ft) in height, whereas chalicotheres are thought to have grown to a height of 3 m (10 ft). Illustrations by Jaime A. Headden (http://qilong.gq.nu/).

its propensity to attack humans. Nzima said that the claim that the Dowa creature had legs of equal length was because the animal was only viewed lying on its side. "It's true a hyena has shorter hind legs and it is easier to tell while it is standing but people saw it while it was lying down. As for the hairs it is natural in every animal that hairs on the tail are longer," he said.

This adds weight to the suggestion that many of the reports of the Nandi bear could be explainable as attacks by spotted hyenas. Perhaps if the attacks involving the legendary Nandi bear had been more thoroughly investigated, as was done with the recent attacks in Malawi, spotted hyenas would have been found as the culprits. (In fact, in 1919, a spotted hyena in Kenya was found responsible for attacks on humans that were ascribed by locals to a gadett, one of the many local names for the Nandi bear (Shuker 1995).) Additionally, it is interesting that in this recent episode a spotted hyena—which, admittedly, was probably an emaciated and mangy specimen—remained unidentifiable to persons who presumedly would be familiar with these animals. Such an event suggests that one should be cautious when assuming that people know their local fauna well enough to not make misidentifications.

Sources: Heuvelmans, B. 1959. *On the track of unknown animals*. Hill and Wang (New York). // Mzembe, D. 2002. Strange Dowa creature killed. *The Nation* (Malawi), http://www.nationmalawi.com/articles.asp?articleID=2567, August 21. // Mzembe, D. 2002. Strange beast was a hyena. *The Nation* (Malawi), August 22. // Shuker, K.P.N. 1995. *In search of prehistoric survivors*. Blandford (London).

Farewell to *Pseudonovibos spiralis*

Since its description in 1994, the mysterious bovid *Pseudonovibos spiralis* has held a prominent place among the new mammals recently discovered in southeastern Asia. Unlike most of the other new species, it is not known on the basis of living animals or complete carcasses. Instead, the only physical evidence for *Pseudonovibos* is horns, some of them isolated, others still attached to the top of the skull (a type of trophy called a frontlet), which are sold in markets in Vietnam and Cambodia. While these lyre-shaped, spiralling horns are clearly from some sort of bovid, they are unlike those of any other species. (There is, however, considerable variation between different horns, prompting some to suggest that not all specimens have the same origin.) Other information on this animal remains meager: there are only a couple of old eyewitness accounts mentioned in the literature, and traditional descriptions of the animal have been vague at best, some suggesting a goat-like animal, others a buffalo-like animal. According to local folklore, *Pseudonovibos* eats poisonous snakes, and its horns are consequently regarded as being of benefit against snake bite (similar traditions exist in other parts of the world regarding various bovids and cervids).

In January 2001, two papers were published that argued that *Pseudonovibos* never actually existed, and that the horns attributed to it were manufactured from those of domestic cattle (*Bos taurus*). In the first of these papers, Alexandre Hassanin et al. report DNA sequences for two genes (the mitochondrial cytochrome *b* and the nuclear lactoferrin) from four frontlets of *Pseudonovibos* obtained in 1925 in what was then French Indochina by a cotton planter named Edmond Marchand. Because the DNA was obtained from the skull bones rather than the keratinous horns that display the distinctive morphology of *Pseudonovibos*, it was important to demonstrate that the horns really came from the same animal as the skull. A comparison of the horn cores with casts of the interiors of the horn sheaths showed that for three of the frontlets, the horns did not match their associated frontlet: they were actually from different animals and were artificially combined. The fourth specimen, however, was all from a single animal, so its DNA represents the animal that produced the horns that display the classic *Pseudonovibos* morphology.

The DNA sequences from all four specimens were identical with each other, and, when compared to those from other species, they were identical to that of domestic cattle, while different from those of other species of bovid. Further support for a domestic origin of *Pseudonovibos* horns comes from analysis of $^{13}C/^{12}C$ ratios in the horn sheaths. The ratio of these isotopes of carbon differs between different kinds of plants, and in herbivorous animals this ratio reflects the type of plants it ate. According to Hassanin et al., the animal that produced the *Pseudonovibos* horns primarily ate grasses, which suggests it was a domestic animal like a cow rather than a dweller of the forests that *Pseudonovibos* supposedly inhabits.

In the second paper, Herbert Thomas, Arnoult Seveau, and Hassanin suggest how the horns were manufactured. They claim that this was done by removing the keratinous sheaths from the horn cores, heating them until they were soft, and then twisting them into a spiral. There are marks on the sheaths that they suggest were made by pliers or another instrument used in twisting the horns. Examination of thin sections of the horn demonstrates that the annulations have been carved into it: the outer surface cuts through the layers of keratin that make up the horn, rather than being parallel to these layers, as would be the case in a naturally annulated horn.

Since these papers were published, there has been much debate about *Pseudonovibos* in the literature. The findings of Hassanin et al. have been widely accepted; it now seems clear that many *Pseudonovibos* specimens in collections around the world are actually forgeries manufactured from the horns of domestic animals (probably in some cases from the water buffalo, *Bubalus bubalis*, as well as from domestic cattle). This idea has been confirmed for the type series of *Pseudonovibos*, as examination of thin sections from these horns shows that their annulations were artificially carved. The process that Thomas et al. hypothesized was used to manufacture the *Pseudonovibos* morphology has also been broadly confirmed by a trophy collector who apparently has first-hand knowledge of the method. Additionally, it has been pointed out that other forgeries are sold in Vietnamese animal markets, such as "cobras" made from nonpoisonous snakes.

Other scholars, however, have disputed the view that all *Pseudonovibos* specimens were artificially created. German Kuznetsov et al. produced a 12S ribosomal DNA sequence from a *Pseudonovibos* specimen which, in their analyses, comes out as sister group to buffaloes (*Bubalus* and *Syncerus*), supporting its status as a separate species. Hassanin and Link Olson, however, have argued against the authenticity of this sequence: they argue that it is a chimera produced by incorrectly connecting fragments of DNA that come from domestic cattle, water buffalo, and saiga (*Saiga tatarica*) (the first of these possibly being from the actual producer of the frontlet, the other two likely due to contamination).

Robert Timm and John Brandt have repeatedly argued for the authenticity of two specimens of *Pseudonovibos* at the University of Kansas. These were originally obtained by a hunting expedition in 1929, and it has been alleged that they may have been collected from an actual animal rather than merely purchased in a market. Radiographs of these specimens show that the horn sheaths were removed from their cores, the tips of the cores were removed, and the sheaths were then reattached with a nail. Timm and Brandt suggest this was done to remove the soft tissues present inside the horns (although others have denied that this was common practice). They argue that the deposition lines seen in the radiographs, which are a natural feature of horn growth, would show distortions if the horns were artificially twisted, and that these distortions are not present. They also argue that genetic evidence may not be as easy to interpret as others think, because perhaps wild *Pseudonovibos* has extensively interbred with domestic cattle (based on the morphology of the preserved portions of the skull, they think that *P. spiralis* should be regarded as a species in the genus *Bos*).

It has not yet been demonstrated that all horns of *Pseudonovibos* are forgeries. Nor has it been demonstrated that the traditions and accounts of this animal do not refer to a new species. However, the recent studies certainly demonstrate that some of the material is fraudulent, and, until convincing evidence shows otherwise, there is no reason to regard *Pseudonovibos spiralis* as a real member of the world's fauna.

Sources: Brandt, J.H., Dioli, M., Hassanin, A., Melville, R.A., Olson, L.E., Seveau, A., & Timm, R.M. 2001. Debate on the authenticity of *Pseudonovibos spiralis* as a new species of wild bovid from Vietnam and Cambodia. *Journal of Zoology* 255: 437-444. // Feiler, A., Ziegler, T., Ansorge, H., & Nadler, T. 2002. *Pseudonovibos spiralis*—Mythos oder Wirklichkeit? *ZGAP Mitteilungen* 18 (1): 21-24. // Galbreath, G.J., & Melville, R.A. 2003. *Pseudonovibos spiralis*: epitaph. *Journal of Zoology* 259: 169-170. // Hassanin, A. 2002. Ancient specimens and DNA contamination: a case study from the 12S rRNA gene sequence of the "Linh Duong" bovid (*Pseudonovibos spiralis*). *Naturwissenschaften* 89: 107-110. // Hassanin, A., Seveau, A., Thomas, H., Bocherens, H., Billiou, D., & Nguyen, B.X. 2001. Evidence from DNA that the mysterious 'Linh Duong' (*Pseudonovibos spiralis*) is not a new bovid. *Comptes Rendus de l'Académie des Sciences* Série III 324: 71-80. // Kuznetsov, G.V., Kulikov, E.E., Petrov, N.B., Ivanova, N.V., Lomov, A.A., Kholodova, M.V., & Poltaraus, A.B. 2002. Mitochondrial 12S rDNA sequence relationships suggest that the enigmatic bovid "Linh Duong" *Pseudonovibos spiralis* is closely related to buffalo. *Molecular Phylogenetics and Evolution* 23: 91-94. // Nadler, T. 1997. Was ist *Pseudonovibos spiralis*? *Der Zoologische Garten* N.F. 67: 290-292. // Olson, L.E., & Hassanin, A. 2003. Contamination and chimerism are perpetuating the legend of the snake-eating cow with twisted horns (*Pseudonovibos spiralis*). *Molecular Phylogenetics and Evolution* 27: 545-548. // Thomas, H., Seveau, A., & Hassanin, A. 2001. The enigmatic new Indochinese bovid, *Pseudonovibos spiralis*: an extraordinary forgery. *Comptes Rendus de l'Académie des Sciences* Sér. III 324: 81-86. // Timm, R.M., & Brandt, J.H. 2001. *Pseudonovibos spiralis* (Artiodactyla: Bovidae): new information on this enigmatic South-east Asian ox. *Journal of Zoology* 253: 157-166.

Globsters, Sperm Whales, and DNA

Occasionally, a large non-descript blob of white fibrous tissue washes up on a beach, puzzling locals and attracting media attention. These "globsters", well-known to cryptozoologists, are often labelled as sea monsters, but the carcasses are usually explained by marine biologists as rotting whales, or pieces thereof. Two recent examples include a 10 ft (3 m) long carcass that washed up at Wanganui, New Zealand, in October 1997, and a similar carcass that appeared on a beach near Zeehan, Tasmania in

January 1998 (see *The Cryptozoology Review* 2 (2): 5, 2 (3): 11-12). Both were explained by local scientists as sperm whale (*Physeter catodon*) remains, though no official results were published.

More recently, on August 2, 2001, a carcass similar to the aforementioned Tasmanian and New Zealand globsters was found on a beach in St. Bernard's, on Fortune Bay, Newfoundland, Canada. The white, fibrous remains were about 5.6 m (18 ft) long and 5.0 m (16 ft) wide, with several lobe-like slits down one side of the carcass. Scientists from the Department of Fisheries and Oceans were sent to identify the carcass, and concluded that it was probably the remains of either a whale or a basking shark (*Cetorhinus maximus*). A specific identification was not possible due to the advanced state of decomposition, but tissue samples were taken and analyzed by evolutionary geneticist Steven Carr, at the Memorial University of Newfoundland in St. John's. Carr and his colleagues were able to extract DNA from the samples and compare the nucleotide sequence to those available for several species of whales and sharks. The result was a near perfect match with the sperm whale (*Physeter catodon*). Carr et al. (2002) explained that the Fortune Bay globster probably represented a large section of muscle that had separated from the vertebrae and ribs, thus explaining the lack of bones and the presence of lobes of flesh, which were the remains of muscle from between the ribs.

Because the New Zealand and Tasmanian globsters mentioned earlier are extremely similar in appearance to the Fortune Bay carcass, this strongly suggests that they were also rotten sperm whale carcasses (Carr's lab is currently working on isolating DNA from samples of the Tasmanian carcass, but the material may be too degraded (Witze 2002)). Furthermore, most, if not all, of the other globsters that have been recorded by cryptozoologists consistently bear a close resemblance to the Fortune Bay carcass. This suggests to us that all globster carcasses are the decomposed remains of whales, quite possibly sperm whales specifically. We would even extend this blanket explanation to the famous "giant octopus" that was described from St. Augustine, Florida in 1898. This carcass was initially described by A.E. Verrill as a giant octopus, but he later changed his mind and stated it was the remains of a sperm whale (Ellis 1994). Cryptozoologists such as Roy Mackal, Gary Mangiacopra, and Michel Raynal have since championed evidence supporting a giant octopus identity. They have challenged a study by Pierce et al. (1995) that concluded that the St. Augustine carcass was the remains of a sperm whale, based on ultrastructural and amino acid analyses on a small sample of the carcass preserved at the Smithsonian Institution. (Pierce also has unpublished results of tests on the 1998 Tasmanian globster sample showing that it was likely a whale (Witze 2002)). Given its general similarity to other globsters, which are almost certainly whale remains, we think that the St. Augustine carcass may well be the rotten piece of a large whale. However, Michel Raynal recently stated (post to the CZ Internet mailing list, February 14, 2002) that he and his colleagues have isolated DNA from the Smithsonian sample, and that upon comparison with various marine animals, the tissue was found not to be of cetacean origin. These intriguing results will be published soon, and should increase the debate over the identity of the St. Augustine blob.

Sources: Carr, S. M., Marshall, H. D., Johnstone, K. A., Pynn, L. M., and Stenson, G. B. 2002. How to tell a sea monster: molecular discrimination of large marine animals of the North Atlantic. *Biological Bulletin* 202: 1-5. // Ellis, R. 1994. *Monsters of the Sea*. Alfred Knopf (New York). // Pierce, S. K., Smith, G.N., Maugel, T. K., and Clark, E. 1995. On the Giant Octopus (*Octopus giganteus*) and the Bermuda blob: homage to A.E. Verrill. *Biological Bulletin* 188: 219-230. // Witze, A. 2002. DNA tests solving sea mysteries. *Dallas Morning News*, March 20.

New and Old Species of Beaked Whales

It has often been said that no group of large mammals remains so poorly known as the ziphiids (beaked whales). Two new species were described in the 1990s (*Mesoplodon peruvianus* in 1991 and *M. bahamondi* in 1996), and there have been numerous sightings of ziphiids that could not be identified.

Another new species of ziphiid, *Mesoplodon perrini*, is described by Merel L. Dalebout et al. (2002). The type material consists of four whales that washed up on the coast of California in the 1970s and a fifth specimen that washed up in 1997. They were initially identified as *M. hectori*, otherwise known only from the Southern Hemisphere, until studies of their mitochondrial DNA in 1998 suggested they were distinct species (as was discussed at the time by Naish (1998)). The new genetic work by Dalebout et al. suggests not only that *M. perrini* is distinct from *M. hectori*, but that the two species are not particularly closely related. While the two species are very similar morphologically, Dalebout et al. did find a number of osteological differences between them.

A new paper by Anton L. van Helden et al. (2002) adds considerably to our knowledge of the whale described in 1996 as *Mesoplodon bahamondi*. *M. bahamondi* was originally described on the basis of a worn and incomplete skull from the Juan Fernandez Archipelago (Chile), and a second skull in similar condition from New Zealand was subsequently identified (it had previously been published as *M. ginkgodens*). Now, phylogenetic analyses of mitochondrial DNA obtained from these specimens

shows that there is in fact a third specimen of this species--a partial lower jaw collected in 1872 in the Chatham Islands (New Zealand). In 1874, J.E. Gray named this specimen *Dolichodon traversii*, but since then it has usually been assigned to *M. layardii*, as its large teeth are generally similar to those of that species. Van Helden et al. demonstrate, however, that there are a number of differences between the teeth of these taxa. As a consequence of this work, the name *M. bahamondi* should be abandoned in favor of the older *M. traversii*.

Finally, Robert L. Pitman and Morgan S. Lynn (2001) present a review of what is known of the unidentified ziphiid from the eastern tropical Pacific that has acquired the name *Mesoplodon* species "A." There are two color morphs of this whale: one is black or dark brown with a white stripe passing down the side (giving rise to a chevron-like pattern when seen from above), and the other is brown or grey without patterns. These are presumed to be male and female, respectively, as only whales possessing the chevron pattern bear the extensive scars from interspecific fights characteristic of male ziphiids. According to new estimates from aerial photogrammetry presented by Pitman and Lynn, the average length of *M.* sp. "A" is 3.52 m for males and 3.74 m for females (previous length estimates for *M.* sp. "A" were 5.0-5.5 m). *M.* sp. "A" is known from 65 sightings of living animals, as well as photographs of an uncollected carcass that washed up in Peru in 1955 and may have been a male *M.* sp. "A."

Although *Mesoplodon* sp. "A" has long been discussed as a possible new species, Pitman and Lynn suggest that this is not the case, and that it is actually *M. peruvianus*. Both occupy the same range, and both have relatively short beaks with teeth in similar positions. The new size estimates for *M.* sp. "A" indicate that this animal is small enough to be *M. peruvianus* (all known specimens of which are less than 3.9 m in length). Although no specimens of *M. peruvianus* have been collected that show the striking color pattern of *M.* sp. "A," all are females or immature males, and the chevron-like pattern is thought to be restricted to adult males.

Two ziphiids previously known only from skulls have also been mentioned in the past as candidates for *Mesoplodon* sp. "A": *M. traversii* and *Indopacetus pacificus*. It seems that *M. traversii* can be ruled out, as the new length estimates for *M.* sp. "A" indicate that it is smaller than *M. traversii* is hypothesized to be, and the teeth of *M. traversii* are now known to be much larger than those of *M.* sp. "A." Pitman and Lynn (2001) also mention a *M.* sp. "B" which they suggest may be *M. traversii*.

Several fresh specimens of *Indopacetus pacificus* have recently been obtained. These new specimens demonstrate that this species is certainly distinct from *M.* sp. "A," and instead confirm the idea, previously argued by Pitman et al. (1999), that sightings of a whale in tropical waters that had been attributed to *Hyperoodon* sp. are actually of *I. pacificus*. So far, DNA samples obtained from these new specimens have been too fragmentary to determine whether *I. pacificus* should be left in its own genus or placed in *Mesoplodon*, as some have suggested (Dalebout et al., 2003).

Sources: On an unidentified beaked whale found stranded in Kagoshima. http://www.kahaku.go.jp/english/news/research_topix/stranding_inf/ // Dalebout, M.L., Mead, J.G., Baker, C.S., Baker, A.N., & van Helden, A.L. 2002. A new species of beaked whale *Mesoplodon perrini* sp. n. (Cetacea: Ziphiidae) discovered through phylogenetic analyses of mitochondrial DNA sequences. *Marine Mammal Science* 18: 577-608. // Dalebout, M.L., Ross, G.J.B., Baker, C.S., Anderson, R.C., Best, P.B., Cockcroft, V.G., Hinsz, H.L., Peddemors, V., & Pitman, R.L. 2003. Appearance, distribution, and genetic distinctiveness of Longman's beaked whale, *Indopacetus pacificus*. *Marine Mammal Science* 19: 421-461. // Naish, D. 1998. A possible new species of ziphiid whale. *The Cryptozoology Review* 3 (2): 25-28. // Pitman, R.L. 2002. Alive and whale. *Natural History* September. // Pitman, R.L., & Lynn, M.S. 2001. Biological observations of an unidentified mesoplodont whale in the eastern tropical Pacific and probable identity: *Mesoplodon peruvianus*. *Marine Mammal Science* 17: 648-657. // Pitman, R.L., Palacios, D.M., Brennan, P.L.R., Brennan, B.J., Balcomb, K.C., III, & Miyashita, T. 1999. Sightings and possible identity of a bottlenose whale in the tropical Indo-Pacific: *Indopacetus pacificus*? *Marine Mammal Science* 15: 531-549. // van Helden, A.L., Baker, A.N., Dalebout, M.L., Reyes, J.C., Van Waerebeek, K., & Baker, C.S. 2002. Resurrection of *Mesoplodon traversii* (Gray, 1874), senior synonym of *M. bahamondi* Reyes, Van Waerebeek, Cárdenas and Yáñez, 1995 (Cetacea: Ziphiidae). *Marine Mammal Science* 18: 609-621.

The Case Against the Silver Coelacanths

In 1964, a chemist named Ladislao Reti bought a small silver sculpture from a church near Bilbao, Spain, of a fish that closely resembles a coelacanth. The following year, Maurice Steinert, then a biology student, bought a similar object from an art gallery in Toledo. The two figurines were thought to be ex-votos placed in churches, and they were widely assumed to be several hundred years old. (There have been reports of further similar sculptures, but their current whereabouts are unknown, and there are no known photographs of these supposed objects.) Due to the presence of certain features, it did not seem that they could have been modelled

on the basis of fossil material. As a result, it was widely speculated in both ichthyological and cryptozoological literature either that the artists who made the sculptures somehow knew of the coelacanth population in the Comoros, or that they represented an as-yet unknown population of coelacanths in the waters around Spain or a Spanish colony. When some experts on Spanish silver art saw photographs of the sculptures, they suggested that they may have been made in Mexico, prompting some to suggest they could represent a population of coelacanths that has been speculated to exist in the Gulf of Mexico.

Recently, Hans Fricke and Raphael Plante (2001) published the results of a more detailed consideration of these sculptures. They were unable to find Reti's fish. Based on a published photograph, Fricke and Plante suggest that it was actually sculpted using photographs of the holotype specimen of *Latimeria chalumnae* as a model—both fish have their pectoral fins in an unnatural position, and both have similar damage to the caudal fin. (A similar argument was previously made by Peter L. Forey (1998).) They do note, however, that the unnatural angle of the pectoral fins is necessary to support the sculpture.

Fricke and Plante took Steinert's fish to experts on Spanish silver art. Based on a number of stylistic characters, they concluded that it was actually a recent piece of Spanish folk art, rather than an ex-voto or a Mesoamerican sculpture several hundred years old. This is also supported by the lack of wear on the fish, and the low price at which it was sold. (One of the experts consulted, Jose Cruz-Valdovinos, had said in 1989 that this piece was probably from the 16th or 17th century, on the basis of photographs. Having now examined the actual sculpture, he favors a much more recent date.) Fricke and Plante conclude that this piece was also probably engraved on the basis of photographs of some of the coelacanths found in the 20th century.

This study therefore destroys an important piece of evidence for the supposed presence of a population of coelacanths in the Gulf of Mexico or the Mediterranean, as has been suggested by some cryptozoologists.

Sources: Forey, P.L. 1998. *History of the Coelacanth Fishes*. Chapman and Hall (London). // Fricke, H., & Plante, R. 2001. Silver coelacanths from Spain are not proofs of a pre-scientific discovery. *Environmental Biology of Fishes* 61: 461-463. // Raynal, M., & Mangiacopra, G.S. 1995. Out-of-place coelacanths. *Fortean Studies* 2: 153-165.

Other Cryptozoology News

• Conodonts are slender, jawless, soft-bodied organisms that may represent the earliest vertebrates (Fig. 2); they first appeared in the late Cambrian (480 mya) and were common until going extinct at the end of the Triassic (230 mya) (Kardong 1998). Recently, however, Russian taxonomist A.P. Kasatkina (2000) published a short paper claiming that she had discovered the remains of a present-day adult female conodont in plankton samples taken from the Laptev Sea, Arctic Ocean, in 1993. Considering what a living specimen could tell scientists about the biology and phylogeny of these enigmatic creatures, Kasatkina's find would have been one of the most monumental zoological discoveries since the coelacanth was rediscovered in 1938. Unfortunately, it turns out that Kasatkina's "conodont", which she named *Panderiella viva*, is almost certainly a decomposing bristlemouth fish (family Gonostomatidae), probably of the genus *Cyclothone* (Averianov 2001; Kammerer 2001). (This is perhaps not surprising, since *Cyclothone*, species of which are found in deep waters of every ocean, has the honor of being the most abundant vertebrate genus on the planet (Nelson 1994)). Having examined photos and illustrations of *Panderiella viva*, we agree with a gonostomatid identity; the gill arches, vomerine teeth, various other mouth components, urohyal, and fin rays are all evident on the specimen.

Sources: Averianov, A. 2001. Post to Vertebrate Paleontology mailing list. January 12. // Kammerer, C. 2001. Post to Vertebrate Paleontology mailing list. January 12. // Kardong, K.V. 1998. *Vertebrates: Comparative Anatomy, Function, Evolution*. 2nd ed. McGraw-Hill (Boston). // Kasatkina, A.P. 2000. Zhivoye iskopayemoye—konodonta (Euconodontophyles). *Doklady Akademii*

Figure 2. Speculative reconstruction of a conodont. Illustration by Jaime A. Headden.

Nauk 373: 710-713. Translated as: Conodont (Euconodontophyles), a living fossil. *Doklady Biological Sciences* 373: 419-422. // Nelson, J.S. 1994. *Fishes of the World*. 3rd ed. John Wiley & Sons (New York).

• Recently, news of large sand tiger sharks (genus *Odontaspis*) that lurk in deep (ca. 60 m (200 ft)) water off Malpelo Island (Colombia) in the eastern Pacific have reached the popular media (Kirschner and Moyer 2001). Shuker (2001) tells of an article by François Sarano that appeared in the September 2001 issue of the magazine *30 Millions d'Amis* about Colombian biologist Dr. Sandra Bessudo's quest for the sharks. The sand tigers have been repeatedly seen and photographed by divers (see http://www.divexprt.com/latest/roes12.html), who estimate the largest specimens as being 6 m (20 ft) in length. This size is significantly greater than that of the two known species of *Odontaspis*, *O. ferox* (Fig. 3) and *O. noronhai*, which grow to 4.1 m (13.5 ft) and 3.6 m (11.8 ft), respectively (Compagno 2001). Malpelo Island's *Odontaspis* also apparently have a dorsal fin (presumably the first) that is positioned more anteriorly than in *O. ferox* or *O. noronhai*. The differences in size and dorsal fin placement have led to the speculation of a new species. Most shark experts, however, are more reserved; R. Aidan Martin has examined several photographs and believes the Malpelo Island sand tigers are "almost certainly *O. ferox*" (pers. comm. November 4, 2001) and Leonard Compagno (2001) reaches the same conclusion. Despite the likely fact that the Malpelo Island sand tigers are not a new species, it is remarkable that they are reported to be 2 m longer than the accepted maximum length for *O. ferox*. Compagno (2001) notes that "specimens have not been measured or photographed in such a way as to confirm this", but hopefully a specimen will be captured or stereophotographed (Klimley and Brown 1983) so that their size can be confirmed.

Sources: Compagno, L.J.V. 2001. *Sharks of the World: an annotated and illustrated catalogue of shark species known to date. Volume 2. Bullhead, mackerel, and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes)*. FAO Species Catalogue for Fishery Purposes No. 1, Vol. 2. Food and Agricultural Organization of the United Nations (Rome). // Kirschner, S.K., and Moyer, M. 2001. Move over, nessie. *Popular Science* October: 16. // Klimley, A.P., and Brown, S.T. 1983. Stereophotography for the field biologist: measurement of lengths and three-dimensional positions of free-swimming sharks. *Marine Biology* 74: 175-185. // Shuker, K.P.N. 2001. A strange shark. *Fortean Times* 153: 20.

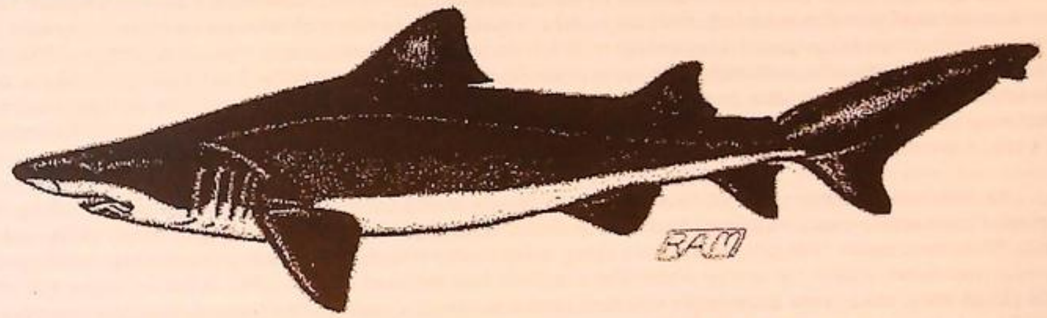

Figure 3. *Odontaspis ferox*. Illustration by R. Aidan Martin, www.elasmo-research.org.

• In a recent article for *BBC Wildlife*, Brian Leith (2001) describes an expedition to the Congo to film a BBC series on the region. Leith claims that when the local Bakaya people were shown an illustration of a rhinoceros (no species is specified) from *Kingdon's Field Guide to African Mammals*, they identified it as mokele-mbembe, the famous "living dinosaur" reputed to haunt the Congolese rain forest. This led Leith to suggest that the legend of mokele-mbembe may be based on traditional recollections of rhinos.

Sources: Kingdon, J. 1997. *Kingdon Field Guide to African Mammals*. Academic Press (San Diego). // Leith, B. 2001. At the heart of life's mystery. *BBC Wildlife* 19: 64-70.

Thanks to: Matt Bille, Loren Coleman, Richard Ellis, Keith Foster, Jamie A. Headden, Gary Mangiacopra, Aidan Martin, Darren Naish, Michel Raynal.

Giant Squids Are Red Herrings: Why *Architeuthis* Is an Unlikely Source of Sea Monster Sightings

by Charles G.M. Paxton

Introduction

Both cryptozoologists and sceptics search for naturalistic explanations of historical accounts of fantastic animals. But such an approach has dangers. Accounts of animals in old texts may have more cultural origins than zoological ones (Meurger 1988, 1999; Baxter 1998) and there is a danger of oversimplifying a complex phenomenon: a convenient explanation is found, the mystery is solved and the world moves on. But the given explanation may not actually explain the phenomena under study. Giant squids (*Architeuthis* spp.) have been used as just such a convenient rationalisation for accounts of sea monsters: the kraken was a giant squid, the sea monk of the Renaissance natural histories was a giant squid and sea-serpents are giant squids cruising the seas with their tentacles sticking out of the water. All of these propositions can be shown to be unlikely (albeit not impossible) when considering the wider context of the accounts under consideration and the little that is known about the biology of the giant squid.

What do we know about giant squids?

Architeuthis spp. are thought to be mesopelagic predators of fishes, smaller squids and other animals (reviewed by Ellis 1998; Roper and Boss 1982). They occur worldwide up to high latitudes (Ellis 1998). Giant squids are also themselves prey. Juveniles are eaten by fishes such as the large midwater predator *Alepisaurus*, and a variety of other animals (reviewed by Ellis 1998; in addition: elephant seals *Mirounga* spp. (Antonelis *et al.* 1994), sleeper sharks *Somniosus* spp. (Cherel and Duhamel 2004)). As adults they are known only to be consumed by the sperm whale *Physeter catodon* (Clarke 1980). Presumably sperm whales cannot eat the very largest squids as the whales generally swallow their food whole and it is difficult to imagine even the biggest bull sperm whales taking a 55ft (16.8 m) long *Architeuthis*. As far as I am aware, no one has addressed the interesting question of exactly how large a squid a sperm whale could swallow.

As *Architeuthis* has rarely (if ever) been authentically seen in healthy condition at sea, we know almost nothing of its behaviour. Conclusions can only be inferred from what is known of its physiology and morphology. Opinion differs as to its lifestyle. Whilst some marine biologists suggest it is a strong active hunting predator, others think it is a passively drifting predator with weak musculature, without the nervous wherewithal to actively hunt (reviewed by Ellis 1998). It has the largest eyes of any animal (Wood 1996), which seems incompatible with the idea of it as a passive predator. The longest authenticated specimen was 57 ft (17.4 m) long including tentacles (Ellis 1998). The largest body belonged to an animal caught in 1878 and measured 20 ft (6.1 m) (Heuvelmans 1968). Most accounts of *Architeuthis* imply that they are solitary although there have been purported sightings of large schools of giant squids (Ellis 1998). Giant squids are thought to be reddish-purple in body colour (Roper and Boss 1982).

On less sturdy grounds, we can also make deductions about the giant squid's behaviour and physiology based on what we know of other squid species. It almost certainly cannot survive low salinities as almost all known squids are osmoconformers, with a narrow tolerance for salinity fluctuations (Boyle 1991; Withers 1992). It also means that in common with almost all other decapod cephalopods the giant squid almost certainly carries its tentacles (the two longer arms) within the rest of its arms (1). They do not protrude except while grabbing prey.

Architeuthis as a sea-serpent

The latter two points (if they are correct) immediately undermine two hypotheses concerning the possibility of giant squids being mistaken for other animal forms. Firstly giant squids cannot exist in freshwaters as was proposed for Loch Ness by Shiels (1984) or for example in the Baltic Sea where there is reduced salinity and other cephalopod species are not found (Muus and Dahlstrøm 1977). Secondly they are unlikely to cruise the oceans with their tentacles sticking out of the water. Even if they do stick

Paxton, C.G.M. 2004. Giant squids are red herrings: why *Architeuthis* is an unlikely source for sea monster sightings. *The Cryptozoology Review* 4 (2): 10-16.

their tentacles beyond the eight arms (some deep water squids do this, so it is not wholly improbable (see end note 1) they might, if the weak *Architeuthis* lobby is correct, lack the musculature to carry their arms for any length of time into the air. There are no studies on the strength and stamina of the arms and tentacles of *Architeuthis*. Further I know of no accounts of smaller squids placing both their tentacles out of their water unsupported for any length of time (one tentacle by itself is useless for grabbing prey). Nor are there any accounts of squids grabbing airborne prey.

Incidentally at this point it is as well to question the belief that squids attack ships because they think it is their enemy, the sperm whale. No animal will actively hunt down and attack its predators out of vindictiveness, especially if there is a massive size disparity between them. This is a sure way to extinction. There is no more reason to expect squids to attack sperm whales than gazelles to hunt down and attack lions. The only probable reasons squid might attach themselves to large boats would be if they misjudged the vessels' size and took them for food or thought the boats were squid of the opposite sex!

Although the giant squid tentacle as sea-serpent neck theory is often mentioned in popular books (e.g. Miller et al. 1977), most interpretations of giant squids as sea-serpents have not in fact used this posture at all. The earliest use of the giant squid to explain the sea-serpent that I can find comes from Henry Lee's 1883 booklet *Sea Monsters Unmasked* (2). In discussing a sighting of a sea-serpent in 1845, Lee explicitly mentions the characteristics of a giant squid that could give rise to a sea-serpent interpretation: the giant squid is "a long marine animal", with "two fins near the forefront of the body" which moves in apparent undulations, it "boils the water", the body is "round and of a dark colour" and it disturbs the water behind it (i.e. behind its direction of movement). Of course the giant squid does have these characteristics but then so do just about all other large marine animals.

Lee explains the famous "sea-serpent" sightings of Egede (1734), the *Daedalus* (1848), and the sighting mentioned above (recorded by the Archdeacon of Molde), as giant squid sightings. Lee's explanation of the *Daedalus* serpent is unconvincing (as he partially conceded) because the crew got so close as to see the head in some detail and presumably they would have seen the distinct tentacles and eye of a squid. The *Daedalus* serpent was countershaded, however, which is compatible with a slight lightening of the colour known to occur on the ventral surface of *Architeuthis* (Roper and Boss 1982). On the other hand, many aquatic organisms are countershaded, possibly including hypothetical sea-serpents, so this fact does little to support a giant squid identity. Reasons of space preclude a reprint of the *Daedalus* accounts here but there is only one additional morphological feature that is shared by the *Daedalus* serpent and a squid: the presence of a fin. But even this feature, on the dorsal surface of the animal, is irreconcilable with the terminal and horizontally-flattened mantle fin of a squid. In the squid-*Daedalus* reconstruction of Lee (1883) the squid is moving backwards so the fin would be the head of the serpent. Arguments such as these, which invoke the fact that the *Daedalus* animal was long and thin and hence squid-like once more preclude a number of other long and thin animals that would, if anything, be even more likely to appear serpentine on the surface (e.g. cetaceans, sharks or oarfishes). Exactly the same argument can be used to criticize the squid explanations proposed by Ellis (1998) for the sea-serpent seen in 1848 from H.M.S. *Plumper* (Heuvelmans 1968) and the sea-serpent seen by von Ferry and reported by Pontoppidan (1752-1753, 1755).

One sea-serpent sighting that does appear to have been possibly caused by a giant squid was reported by the captain of the barque *Pauline* off Cape Saõ Roque, Brasil, in January 1875. He saw a white sea-serpent wrapped around a sperm whale which was struggling at the surface. The captain's interpretation that the sea-serpent was trying to constrict the sperm whale is ludicrous given the merits of constricting an animal that can hold its breath and has collapsible lungs. However sperm whales do eat giant squid, a whole or part of which, entangled with the cachalot's mouth, could be mistaken for a white sea-serpent embroiled in battle with a cetacean predator. Thus this encounter is by far the strongest possible case of a giant squid being identified as a sea-serpent, if it is assumed the maroon surface layer of the squid's skin had been lost during the encounter. There is however a solely cetacean based explanation for the *Pauline* sea-serpent that should also be considered (Paxton *et al.* in press): the witnesses actually saw the penis of a sperm whale which can appear long, pale, and serpent-like. Neither a squid nor the cetacean interpretation however can easily explain a second *Pauline* sighting a few days later when a pale whitish pillar-like serpent was seen protruding out of the water alone.

Another famous account of a sea-serpent that Lee suggested was actually a giant squid was the account of Egede (P. Egede 1741; H., Egede 1741, 1745) of an animal "shaped at the rear like a serpent" seen off the coast of Greenland in 1734 (Figure 1). These accounts have recently been reviewed by Paxton *et al.* (in press) and Thomas (1996). Thomas (1996) suggested the Egede serpent was a zeuglodont whale whereas Paxton *et al.* (in press) suggest it was a North Atlantic right whale *Eubalena glacialis*, humpback whale *Megaptera novaeangliae* or grey whale *Eschrichtius robustus*, again possibly with a protruding serpentiform penis. Lee (1883) suggested that the Egede serpent was a squid in some distress upon the surface of the water (Figure 2), a thesis that has received recent support from Ellis (1998). Despite the occurrence of *Architeuthis* spp. at high northern latitudes (Ellis 1998), again neither multiple appendages (apart from the two flippers) nor the prominent eyes nor the purplish red or maroon of a giant squid are

recorded. One account does say the eyes glowed like red fire, but *Architeuthis* is not known to have glowing red eyes, although interestingly a possible early description of a giant squid (Magnus' prickly fish, see below) also has this characteristic. Alternatively, the glowing red eyes may be hyperbole. One primary account refers to the animal as "blowing like a whale" and Lee suggested that the whale-like blow could be water coming out of the siphon. But why not assume parsimoniously that the Egede animal was actually a whale rather than invoking a mode of behaviour (rearing out of the water) that has not been seen in *Architeuthis* or indeed any squid? Furthermore, the supposed posture (Figure 2) needed for the squid to appear as the Egede animal would seem incompatible with a giant squid whose centre of gravity would presumably be somewhere in the mantle cavity where the viscera lie. Perhaps if the mantle was full of air the posture could occur but then the animal would not have been able to submerge. The Egede animal was

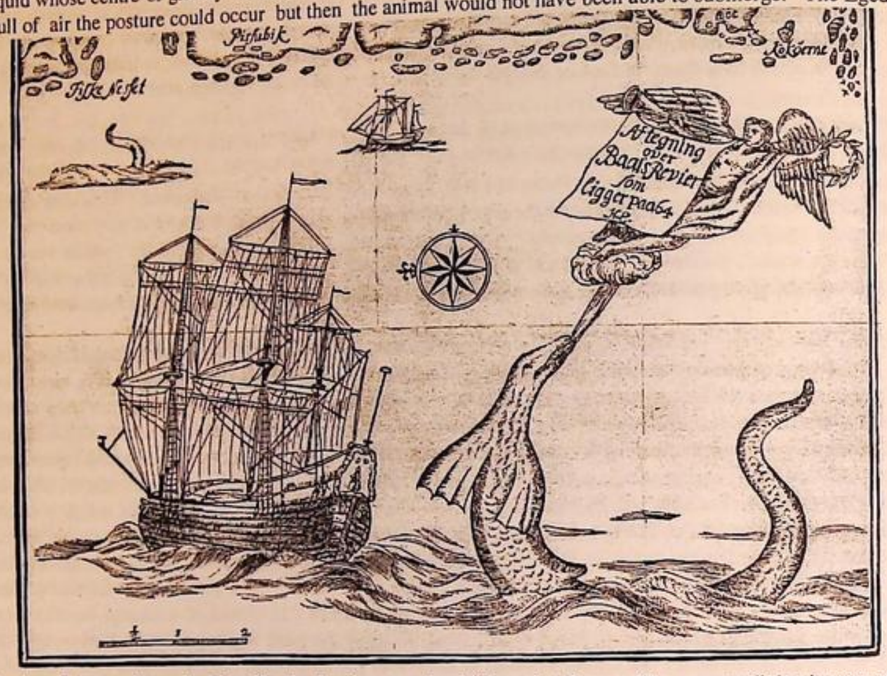

Figure 1. Section of a map drawn by Hans Egede showing an animal "shaped at the rear like a serpent" that he saw off the coast of Greenland in 1734 (P. Egede 1741).

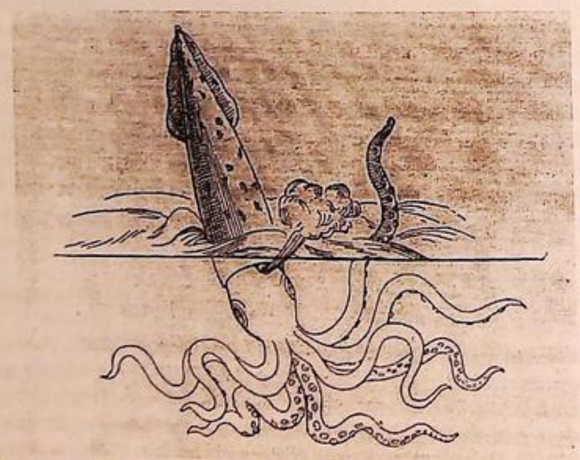

Figure 2. Lee's (1883) reconstruction of the Egede animal as a giant squid. In fact *Architeuthis* has semicircular fins.

observed to submerge several times (P.Egede 1741). It is just conceivable that a squid could pump air in and out of the mantle using the siphon but there is no good reason why it should do this.

The final sea-serpent sighting that is often claimed to be a giant squid was that made by naturalists E.G.B. Meade-Waldo and M.J. Nicoll during an expedition on the Earl of Crawford's yacht *Valhalla* in 1905. They saw a dorsal fin-like object associated with an elongate "neck" and a rounded head "shaped like that of a turtle" (Nicoll 1909). The description is not obviously reconcilable with a squid (apart from being long and thin). A giant squid would have to be placed sideways in the water (with the mantle fin uppermost) to match the description. It also seems doubtful that a squid would not have been recognised by two zoologists even though they were at a distance (see below).

At the *considerable* risk of presenting a circular argument, there is not one first-hand account of an heretofore unidentified sea monster on the high seas which mentions any of the distinctive diagnostic characters of a large cephalopod (i.e. multiple appendages and prominent eyes). Admittedly from a distance a squid at the surface may not look like a squid but in the cases given above the animal was seen in reasonably close proximity (*Daedalus*) or reared out of the water (Egede and *Pauline* sighting). Only the *Valhalla* sighting was seen at a distance (Meade-Waldo had to use binoculars).

Furthermore, if the natural colour of *Architeuthis* is maroon then this distinctive colour has not been reported either. It is not that some of these sightings could not be giant squids but that any general features that could be ascribed to a giant squid could be equally well if not better attributed to other animals.

Architeuthis as kraken prior to the 19th century

It is now popularly assumed that the giant squid was the basis of the kraken, a purported monster of northern seas. Indeed the two terms are now used almost synonymously. This theory developed from Pontoppidan's (1752-1753, 1755) descriptions in his *Natural History of Norway* as well as Pierre Denys de Montfort's arguments in *Histoire Naturelle des Mollusques*. Pontoppidan himself thought his kraken was "of the Polype, or of the Starfish kind". Pontoppidan further describes an account of a young kraken as an animal with "extended long arms and antennae". However Pontoppidan was by no means wholly convinced by his favoured explanation of a "polype" (i.e. a cnidarian or a cephalopod) and pointed out that some people thought that the young of the kraken was the Medusa's Head, *Gorgonocephalus*, a brittle star.

The cephalopod explanation was given its most comprehensive form in English by Heuvelmans (1968) in his book *In the Wake of the Sea-Serpents* and more recently in *The Kraken and the Colossal Octopus* (2003). Heuvelmans arguably created a slightly distorted historiography of the kraken, blurring distinct accounts of sea monsters into a single history. As Pontoppidan's kraken could have been based on a giant squid, Heuvelmans assumed that the kraken's precursors must have also had a connection with a giant squid. For example he refers to the medieval/Renaissance island-monster (see below) as a hybrid of whale and giant squid characteristics, but there is absolutely no evidence for a teuthid component of the island-monster.

The cephalopod basis for the kraken was attacked by Meurger (1999) who pointed out that an Italian, Francesco Negri (1623-1698), had described an animal from northern seas called the *sciu-crac* "which is a fish of enormous size...Its shape is round and flat, fitted with numerous horns or arms...some say the sciu-crac may grow to a whale's size." Meurger argued that this was almost identical to Pontoppidan's description of a kraken and pointed out that one of the words that Pontoppidan said was used for his kraken was *krabben* (see etymological note below), the crab, so the animal is portrayed as an enormous crab not a squid. Although Pontoppidan mentioned the use of *krabben* for this monster, he did not consider a giant crab as a possible source of the kraken. Furthermore, Meurger (1999) found that Franz Paullinus (1643-1711) in two works from 1706 (*Observationes Medico-physicae*) and 1709 (*Philosophische Lust-Stunden)* also described northern Scandinavian reports of a giant crab-like monster that ascended to the surface and attacked boats with its claws. Meurger (1999) speculated that there was a connection between the crab-like kraken and the ubiquitous island monster (a sea creature so large it was taken for an island and landed upon) of the Greek *Physiologus* and the European Latin and vernacular bestiaries. This animal in so far as it can be said to have a zoological basis was a turtle or a whale (Paxton, in prep.). There are no morphological, etymological or historical grounds to link the pre-Pontoppidan kraken with a cephalopod.

However we can firmly link the name kraken to the medieval island-monster in two ways. Firstly Pontoppidan's kraken retains some of the characteristics of the island-monster, notably its large size and an enchanting belch or breath that it used to attract food. Secondly Hans Egede (1741, 1745), who considered the kraken fabulous, says that the word *Kracken* was used by Norwegian

fisherman for exactly the same monster described by Icelanders as the *Hafgufa*. The name *Hafgufa* can itself be followed back to the 14th century Scandinavian wonder-book the *Speculum Regale (The Royal Looking Glass)*, arguably one of the finest non-fictional works of the Middle Ages. Here an island-like sea monster is given the name *Hafgufa*. The description of this animal in turn is almost identical to that of the island-monster of the bestiaries, the *Aspidochelone*, an animal which can possibly be traced back to the Babylonian Talmud (Coulter 1926, Cook 1919) and in a possibly separate fictional lineage turns up in the tales of St. Brendan and of Sinbad in the *1001 Nights* (Heuvelmans 2003, Paxton, in prep.).

Wholly separate from this history is Olaus Magnus' (1555) famous account of a monstrous big-eyed fish set with spines, in book 21 of his *Historia de Gentibus Septentrionalibus* (*History of Northern Peoples*). This spiny big-eyed fish is regarded as distinct from the island-monster, which is discussed separately. Whether the big-eyed spiny fish is an early account of a squid is unclear. Magnus himself thought it was of the "whale kind" but his zoology was not today's zoology. Nonetheless the monstrous prickly fish is a convincing possible description of a giant squid with its arms and large eyes. However this is *not* directly linkable with the kraken/island-monster tradition.

Thus the history of the kraken is considerably more complicated than that of a blurred account of a giant squid or octopus. More research needs to be undertaken in this area. It also should be mentioned that I know of no first hand accounts of an encounter with a sea creature explicitly described by the witnesses as a "kraken".

The "sea monk" as a giant squid

Another sea monster that has been interpreted as a giant squid is the "sea monk" that washed up on the coast of Denmark in 1546 (Paxton and Holland in press). It was described and illustrated in a number of mid-16th century natural histories. The giant squid explanation for the sea monk was made by Johannes Japetus Steenstrup (1854) (the 19th century describer of *Architeuthis*). Steenstrup (1854) likened the illustrations of the sea monk to *Architeuthis*, which he assumed was morphologically similar to the far smaller squid genus *Loligo*, presumably because he had no whole body material by which to make a comparison. However Steenstrup's identification forced him to ignore the fact that all the detailed commentaries referred to the sea monk as scaled, a feature irreconcilable with a squid, giant or otherwise. A more convincing explanation, based on morphological, etymological, and historical evidence, is that the sea monk was actually an angelshark *Squatina squatina* (Paxton and Holland, in press).

Discussion

Given the lack of specific characters to diagnose the above monster accounts as giant squid, why have giant squids been so readily taken as the source of sea monster tales and sightings? No quantitative evidence is available to answer this question, so it is necessary to rely on anecdote and speculation.

A reoccurring characteristic of cryptozoological interpretations of early natural historical texts has been a failure to fully investigate sources and consider their wider context. The author himself is guilty of this in that I have been unable to systematically consider one important potential source for this article, Denys de Montfort's (1802) *Histoire Naturelle des Mollusques* which is almost certainly an important text in understanding the transition of jellyfish-like kraken to squid-like kraken. Further I have not yet looked at the works of Bartholin (1657, *Historiarum anatomicarum rariorum*), von Bergen (1761, *Nova Acta Physico-Medico*), Negri, Paullinus and a number of other relevant early texts, which are difficult to find and are not available in English. Similarly, Egede's (1741, 1745) comment on the kraken has been overlooked by scholars who have tended to consider excerpts from the poor 1745 English translation of Egede rather than consider that book in its entirety despite its importance to the history of sea monsters. We can infer, for example, exactly which species of whale the Egedes were familiar with and those that they were not, and this has very important implications for interpretations of the Egede accounts of the sea monster seen in 1734 (Paxton *et al.*, in press). Likewise, the wider context and history of the island-fish and kraken have until recently been generally ignored by Anglophone researchers relying too much on the authority of Heuvelmans' (1968) abbreviated English translation.

Giant squids are comparatively new. They were only formally described by science in the 1850s. This does not mean, as implied by Heuvelmans (1968 but far less so by Heuvelmans 2003), that before this time they were not accepted by science. No less a person than Joseph Banks, the personification of the scientific establishment in early 19th century England, found and ate (!) giant cephalopod material (not in fact *Architeuthis*) whilst on Captain Cook's 1768 - 1771 *Endeavour* voyage around the world (3). Belief in the existence of giant cephalopods did not place a natural philosopher beyond the scientific pale prior to 1860, but rather on the ultimately winning side of a very low-key scientific debate. The history of the recognition of giant squids by science is a subject that

requires more research.

Nonetheless, their large size, rarity, and morphological difference from the giant marine vertebrates has made *Architeuthis* an ideal choice as an unusual suspect for sightings of unknown animals. Furthermore, the lack of knowledge about their biology meant that such speculation was safe and convincing.

Perhaps the other reason why people may have so readily accepted the giant squid explanation is that the ease of a prosaic explanation blinded investigators to its weaknesses and even errors of fact have been ignored. For nearly 150 years, for example, Steenstrup's *Loligo*-based representation of a giant squid as the sea monk went unchallenged in the scientific literature. The danger to those with a tendency to explain away strange sightings, this author included, is readily apparent. The devil really is in the detail. We must pay attention to diagnostic features of sightings and compare them to all possible animals that may occur in the habitat under consideration. This means we must devote as much if not more time to considering known animals as to considering unknown ones and think about all of their explanations equally critically whether grey seal, giant seal, *Architeuthis* or zeuglodon.

Etymological notes

Both Meurger (1999) and Ellis (1998) state that *Kraken* is the plural of *Krake* in Norwegian, the latter being the original name of the Kraken. This is not the case. For example *Krabben* is not the Norwegian (Boksmål) for "crawlers" or "crabs". In Norwegian the definite article is attached to the noun as a suffix; *Krabe* means "a crab", *Krabben* means "the crab", *Krabber* is "crabs" and *Krabbene* is "the crabs", likewise *Krake*, *Kraken*, *Kraker* and *Krakene*. The modern Danish equivalents would be *Krake*, *Kraken*, *Kraker* and *Krakerne* owing, as far as I know, to the slightly different formation of the definitive plural.

The first mention of kraken in English (as "kracken") is Egede (1745) not Pontoppidan (1755) as stated in the *Oxford English Dictionary*.

End notes

(1) Woods, J. 2003. "Most cephalopods do not expose their tentacles unless grabbing prey. However, some deep-sea species like *Brachioteuthis beani* swim with their tentacles out." Pers. comm. to author.

(2) There is a nagging doubt in my mind that this is not the earliest account. I thought one Andrew Wilson had proposed this in the *Illustrated London News* in 1848 but I cannot find a reference to this in that paper.

(3) From the *Endeavour Journal of Joseph Banks* (reproduced verbatim) (Banks 1980): "3rd March 1769 approx. Lat. 36°..49' S. Lon. 111°..34' W (Co. ords taken from Cook's Journal of same day). I found also this day a large *Sepia* cuttle fish laying on the water just dead but so pulld to peices by the birds that his Species could not be determind; only this I know that of him was made one of the best soups I ever eat. He was very large, differd from the Europaeans in that his arms instead of being (like them) furnished with suckers were armd with a double row of very sharp talons, resembling in shape those of a cat and like them retractable into a sheath of skin from whence they might be thrust at pleasure."

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New Zealand's Giant Gecko: A Review of Current Knowledge of *Hoplodactylus delcourti* and the Kawekaweau of Legend

by Darren Naish

New Zealand's natural history is very much full of surprises. In 1984, one such surprise—a previously overlooked museum specimen—was brought to the attention of Anthony P. Russell, a herpetologist then based in Toronto (now at the University of Calgary), by way of his correspondence with fellow herpetologist Garth Underwood and museum curator Alain Delcourt. Delcourt had been interested in a specimen of large, unidentified lizard which, in 1979, he had discovered in the basement collections of the Muséum d'Histoire Naturelle de Marseille, France (Whitaker and Thomas 1990). Surprisingly, the specimen in question was not new, but had languished in the museum collections for more than a century, during which time it had even been on public display! Realizing that the specimen must be significant, Delcourt sent photos to Underwood and George Zug (a herpetologist at the National Museum of Natural History in Washington, D.C.)—to his credit, therefore, Delcourt single-handedly brought the specimen to the attention of the herpetological community. A huge, stuffed gecko with a total length of 622 mm (24.5 in) and a snout-to-vent length (SVL) of 370 mm (14.6 in), the specimen was easily the largest gecko in the world.

Subsequent investigation by Aaron M. Bauer (then of the University of California) revealed that the gecko was a species of *Hoplodactylus*—a brown gecko—a genus containing nine described species (and as many as thirteen undescribed species (Worthy and Holdaway 2002)) endemic to New Zealand. Presumably, therefore, the specimen had at some stage been transported from New Zealand to France. Though the only known specimen was sadly lacking many of its bones, and obviously all of its internal organs, and was not accompanied by any locality or collecting data, Bauer and Russell decided that the best course of action would be to publish a detailed description of the specimen. In this way, they would generate further interest and publicity and hope to learn more about the species, whatever its current status. In 1986, in volume 13 of the *New Zealand Journal of Zoology*, Bauer and Russell named the giant gecko as a new species of *Hoplodactylus* Fitzinger 1843, *H. delcourti*, in honour of Alain Delcourt (Bauer and Russell 1986).

The type specimen

Catalogued as MMNH 1985-38, the type specimen of *H. delcourti* is an adult male, as evidenced by its cloacal or postcloacal bones (these small, curving bones are associated with the hemipenes of nearly all geckos and may be employed during copulation). At 370 mm (14.6 in) SVL, *H. delcourti* represents a 54% increase in the maximum recorded size for any gecko: the previous record holder, *Rhacodactylus leachianus* of New Caledonia, reaches 240 mm (9.4 in) SVL. Only 3% of the more than 800 extant gecko species have a maximum SVL of more than 130 mm (5.1 in), making these giants all the more remarkable. *H. delcourti* also exceeds the previous largest *Hoplodactylus* species, a specimen of *H. duvaucelii* with a SVL of 160 mm (6.3 in), by more than 131% (Russell and Bauer 1991).

The specimen has a short, very broad head (it is particularly broad across the cheeks) with a flattened forehead. Its scales are very small and granular, with those on the anterior surfaces of the limbs and the ventral surface of the body being larger. Those on the underside of the thighs and around the cloaca are further enlarged and there are 8-12 rows of preanal pores and either four or five enlarged and rounded cloacal spurs. The limbs are comparatively short and robust. Like all but three other species of *Hoplodactylus* (*H. granulatus*, *H. kahutarae* and *H. rakiurae*), *H. delcourti* has broadly dilated digits that have lamellae on their ventral surfaces. The claws are long and robust and the hands and feet are broad. The tail is cylindrical and covered with whorls of flat, rectangular scales. The background colour of the specimen is yellowish brown and, like some living hoplodactylines, it has two elongate dorsal stripes that run from the back of the head to the base of the tail as well as other stripes that run along the side of the body. These stripes are dark reddish brown.

Because the type specimen is preserved as a mount, many of its bones have been removed and only the skull, left medial cloacal bone and fore- and hindlimb skeletons remain. A complete technical description of these elements is provided by Bauer and

Naish, D. 2004. New Zealand's giant gecko: a review of current knowledge of *Hoplodactylus delcourti* and the Kawekaweau of legend. *The Cryptozoology Review* 4 (2): 17-21.

Russell (1986).

Origin of the specimen

As noted earlier, the fact that the giant gecko is clearly a hoplodactyline indicates that it originated from New Zealand, as members of the genus *Hoplodactylus* are only known from this part of the world. However, *Hoplodactylus* belongs to the Carphodactylini and members of this group are known from New Caledonia as well. Given that New Caledonia was formerly a French colony, Bauer and Russell (1986) noted that the occurrence of *H. delcourti* here would readily explain its presence in a French museum. However, this would require a range extension for the genus *Hoplodactylus* and appears less logical than the alternative hypothesis that *H. delcourti* lived on New Zealand, and was collected there by a French scientist (note that, as discussed below, a New Zealand origin for *H. delcourti* has recently been doubted by Worthy and Holdaway (2002)). Though New Zealand does not have any apparently obvious links with France, it turns out that 'French explorers, scientists and settlers were quite active in the North Island, particularly in the Bay of Islands' (Bauer and Russell 1986, p. 146) and Whitaker and Thomas (1990) point out that there were even French settlements on New Zealand in the past. North Island Maori accounts of a large lizard recalling *H. delcourti* also indicate that New Zealand (and perhaps North Island) is the most likely origin for *H. delcourti* (see below).

Figure 1. Ventral (left) and dorsal (right) views of the type specimen of *Hoplodactylus delcourti*. Photograph courtesy Aaron Bauer. From Bauer and Russell (1986).

A rather more precise explanation for the origin the specimen is that it was obtained by the museum's original director, Polydore Roux, during his visit to India in 1819. As the type specimen of the other giant hoplodactyline, *H. duvaucelii*, was acquired by Alfred Duvaucel in India (sometime prior to 1825), it has been suggested that both Roux and Duvaucel had access to interesting New Zealand specimens while on their travels (Whitaker and Thomas 1990).

Another issue is *when* the specimen was acquired by the museum at Marseille. Seeing as the museum was founded in 1819, the specimen presumably post-dates that year. Complete museum records are known from 1902 onwards, so at the same time the specimen must pre-date that year. As no records survive from between 1833 and 1869, it seems most probable that the specimen was acquired sometime within that period (Bauer and Russell 1986).

How might *H. delcourti* have lived?

The morphological similarity *H. delcourti* has with the other *Hoplodactylus* species suggests that it lived in the same way. Living hoplodactylines are omnivores, feeding on fruit and nectar as well as insects, spiders and small vertebrates (including small lizards). They are also viviparous, so *H. delcourti* most probably was as well, and they are scansorial (able to climb but not spending all of their time in the trees) and nocturnal (Mattison 1989). The hands, feet and sharply curved claws of *H. delcourti* suggest that it would have been an able climber (Russell and Bauer 1991), though it would have been quite slow and clumsy compared to smaller geckos.

H. delcourti would also have been long lived: one specimen of *H. duvaucelii* is reported to have lived for 36 years—the greatest recorded longevity for any wild lizard (Daugherty et al. 1993). Hoplodactylines appear to have the lowest fecundity rate yet reported for any lizard: some species give birth twice a year and may only produce a single youngster at a time. Like some other New Zealand animals, some of the hoplodactylines therefore appear to have become long-lived, slow breeding giants (a strategy which

made them vulnerable at the hands of humans and other alien predators).

Why get so big?

Given that *H. delcourti* increases the maximum size of any gecko by 54%, and represents an increase of more than 130% on the largest size of any other hoplodactyline, it is interesting to ask why. Though the concept of gigantism is relative—*H. delcourti* is hardly a giant compared to some other lizards and other reptiles—the species *is* a giant among geckos. Like the majority of other giant geckos (19 of the 27 species that reach over 130 mm (5.1 in)), *H. delcourti* was an island endemic from a landmass that had a long history of isolation (Russell and Bauer 1991). Like other animals on New Zealand, perhaps *H. delcourti* became gigantic because it was able to exploit a lifestyle and size niche largely unavailable to geckos elsewhere. It is well known that normally diminutive groups evolve unusually large species on islands—an argument that would treat *H. delcourti* (and other giant island geckos) as relatively unconstrained (in evolutionary terms) by predators or competitors.

However, it might be that the opposite is true: as a relatively small landmass with a geological history that involves the catastrophic reduction of its land area, New Zealand may have encouraged competition between similar-sized animals. Competing with other New Zealand geckos and perhaps birds and other animals, *Hoplodactylus* may therefore have increased in size as a result of ecological competition.

Indigenous knowledge of *H. delcourti*

If *H. delcourti* once lived on New Zealand, we might expect it to appear in Maori legends. European investigators discovered early on that the Maori have several names for legendary lizard-like animals: Captain Cook, in fact, was the first to write about these legends. There are reported to be several types, known by the names *taniwha*, *mokonui*, *kumi*, *ngarara* and *kaweau* or *kawekaweau* (Bauer and Russell 1987). While some reptile-type creatures in Maori lore are believed to represent tuataras or relict folk memories of crocodiles, goannas and other reptiles, and while the *taniwha* is reported to be enormous and dragon-like (and is consequently regarded as mythical (Anderson 1990)), it is possible that some of these names represent known or as yet undiscovered species.

Bauer and Russell (1987) found that, though in some accounts it was confusingly regarded as amphibious, the *kawekaweau* matched best with what is known of *H. delcourti*: it was allegedly a forest lizard, and in a description of one that was killed by a Maori chief in 1870, its appearance agreed precisely with the morphology and pigmentation of the *H. delcourti* type specimen. Dispatched in the Waimana Valley, North Island, this *kawekaweau* was described as two feet long, as thick as a man's wrist, and brown in colour with longitudinal dull red stripes. A number of authors writing about the *kawekaweau* early in the 20th century noted that it exhibited a banded pattern and often hid under bark or in tree holes—exactly the kind of behaviour we would predict for a large nocturnal gecko. The *kawekaweau* killed in Waimana Valley was discovered hiding under the bark of a dead tree (citations and references for these accounts can be found in Bauer and Russell (1987)). Given these striking similarities, especially between the *kawekaweau* colour pattern and the one seen on the Marseille *H. delcourti* specimen, it seems reasonable to conclude both that the Maori knew of *H. delcourti*, and knew it by the name *kawekaweau*.

The discovery of *H. delcourti* skeletal elements might also be predicted if the species truly was (1) native to New Zealand and (2) present there until recently. Two possible remains have been discovered in subfossil deposits on New Zealand, and have been tentatively interpreted as *H. delcourti* skeletal elements.

The first specimen is a lower jaw with pleurodont teeth from Earnscleugh Cave, central Otago, described by F. W. Hutton (1875), and more recently reinterpreted by Bauer and Russell (1988). Hutton did not illustrate the bone, but he did state that it was of about the same size as the lower jaw of a tuatara (*Sphenodon*). Because tuataras have acrodont teeth (that is, the teeth are fused to the surface of the jaw bone), this possible identity can be eliminated but the size of the specimen (approx. 75 mm (3.0 in)) would exclude the fragment from the size range of any known New Zealand lizard. The large size and lacertilian identity of the Earnscleugh jaw therefore suggest that a large lizard was once present in the region, though unfortunately it cannot be confirmed that this jaw truly did belong to *H. delcourti*.

The second specimen, from the same site, is an unusual curved structure with a series of seven blunt denticulations along its inside curve. Again, Hutton (1899) described this bone, but he was at a loss to identify it and noted that the only thing it recalled was the first thoracic rib of a mammal. Bauer and Russell (1988) found that the specimen did not bear a close resemblance to any rib, but appeared instead to be most like the medial cloacal bones of male geckos and some other groups of lizards. These bones probably

help support the hemipenes and accompanying cloacal organs of the lizards and are usually of a C- or J-like shape. The closest resemblance the Earnscleugh specimen had with any living gecko was specifically with carphodactylines, including members of *Hoplodactylus* and *Naultinus*. Again, the Earnscleugh specimen was of about the right size to have come from an *H. delcourti*. Though identification to species of a medial cloacal bone cannot (at this stage) be conclusive (the elements are hardly diagnostic), this element may well be another indication that *H. delcourti* was once a New Zealand resident (though see below).

H. delcourti, where are you now?

An interesting question that Bauer and Russell soon found themselves asking is, what has happened to *H. delcourti* since the procurement of the type specimen? Might the species still survive, or, if not, did it at least survive until recently? Testing this idea would involve interviewing people—both Maori and pakeha (non-Maori)—in the area apparently inhabited by the *kawekaweau* as well as investigating the area itself to see if it might harbour signs of an overlooked giant gecko species. While it seems likely that *H. delcourti* is most probably extinct, Bauer and Russell have, throughout their research, kept an open mind to the alternative possibility (Anon. 1988, 1990; Bauer and Russell 1990).

The search for live kawekaweau specimens began in 1990 when the National Museum of New Zealand (Wellington) created an exhibition entitled "Forgotten Fauna - New Zealand's Amphibians and Reptiles". Following much negotiating and the taking out of a large insurance policy, the *H. delcourti* specimen was loaned to the New Zealand museum for the duration of this exhibition (Anon. 1990). What proved surprising was that the public display of this specimen (as well as an accompanying radio discussion by James Mack, assistant curator of the museum) elicited numerous members of the public to come forward and report eyewitness accounts of what they regarded as live specimens of the same animal! Accounts that were regarded as particularly worthy of note were those of Joe McClutchie from Gisborne (east coast of North Island) who claimed to have twice seen very large lizards in the area. Initially published in the New Zealand press, the reports generated such official interest that, in April 1990, two scientists employed by the National Museum, Tony Whitaker and Bruce Thomas, were given the task of compiling an official report (Anon. 1990, Grant 1990).

After visiting the Gisborne region between the 7th and 11th April, Whitaker and Thomas produced a 23-page document containing their results (Whitaker and Thomas 1990). Investigating 14 separate groups of reported sightings (many of which were vague and described indeterminate lizards which did not bear any special resemblance to *H. delcourti*), they were not convinced that any of the witnesses had really seen *H. delcourti* and also pointed out that the Gisborne region is so devoid of large, creviced trees and other places where a large lizard might hide that its survival in the area seems very unlikely. As some of the sightings described creatures reminiscent of mustelids or goannas, it is likely that a number of misidentifications have contributed to the lizard sightings.

21st century doubts

Despite the reasonable evidence indicating a New Zealand origin for *H. delcourti*, Trevor Worthy and Richard Holdaway (2002) have recently suggested that *H. delcourti* never was a native of South Island, and in fact was most likely never a native of New Zealand at all. Arguing that the Earnscleugh Cave cloacal bone identified by Bauer and Russell (1988) "is not referable to any class of vertebrates with certainty", Worthy and Holdaway (2002) note that the absence of any giant gecko bones from the large sample of small vertebrates from South Island demonstrates the absence of *H. delcourti* from South Island (see also Worthy 1998). Furthermore, its absence from the fossil faunas of North Island also suggests to Worthy and Holdaway (2002) that it never occurred there either.

This sceptical view is problematical for a few reasons. Firstly, besides the alleged Earnscleugh cloacal bone there is also the jaw described by Hutton (1875), though as noted above this cannot be referred to *H. delcourti* with certainty. Secondly, given that *Hoplodactylus* is presently only known from New Zealand, and that *H. delcourti* is a member of that genus, it is more parsimonious to assume that *H. delcourti* was native to New Zealand than to assume otherwise and thereby invoke a range extension for the genus. Thirdly, Worthy and Holdaway (2002) are certainly right that the apparent absence of any *H. delcourti* bones from New Zealand is highly suspicious, but it remains possible that *H. delcourti* was extremely rare and still awaits discovery in fossil samples. As a palaeontologist working on new taxa discovered in a region where the strata have been systematically scoured on a regular basis for more than 130 years, I have first-hand experience of the fact that rare taxa can be so poorly represented that they remain overlooked or undiscovered for a surprising amount of time. The true origins of *H. delcourti* remain mysterious and require confirmation, but in the absence of evidence to the contrary it seems most reasonable to maintain that this species was a denizen of New Zealand, albeit a very rare one with no compelling fossil record.

Acknowledgements

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The Last Wolf

by Matt Bille

The wolf has captured humanity's imagination in a way no other creature ever has. Unfortunately, such notoriety has not been good for this intelligent and reclusive predator.

In North America, a relentless campaign of extermination has wiped out at least six subspecies of *Canis lupus*. Not surprisingly, the most spectacular types were among the first to go. The ghostly Newfoundland wolf, solid white and weighing well over 100 pounds (45 kg), became extinct about 1911. The even larger Kenai wolf probably vanished from its Alaskan range about 1915.

The red wolf, *Canis rufus*, almost disappeared as well. The Texas subspecies is extinct after having survived into the early 1970s. The Mississippi red wolf, driven into the most miserable swamps of Texas and Louisiana, was extinct in the wild by 1980. Its genetic heritage survived in the wild only in a population of coyotes that had formerly hybridized with red wolves.

Fortunately, a captive population was bred from 14 wolves trapped between 1973 and 1979. Beginning in 1987, a few wolves were released onto government-owned land in North Carolina, and other reintroduction projects are underway. There are now over 300 red wolves in captivity or in the reintroduction areas.

Wolves may, at one, time, have been the most wide-ranging mammals on Earth (not counting their adversaries, the humans). Even the island nation of Japan had its endemic wolf—the *yamainu*, or *shamainu*. The yamainu is normally listed as a wolf subspecies, *Canis lupus hodophilax*, although some authorities consider it too distinct to be just another local version of the wolf. The animal was originally described as a separate species, *C. hodophilax*. A few modern specialists, such as Dr. Yoshinori Imaizumi, have argued this identity was correct.

If the yamainu was a true wolf, it was the smallest known race of that species. It was only about 14 inches (35 cm) high at the shoulder and had disproportionately short legs for a wolf.

Centuries ago, the Japanese wolf was looked on favorably in the local culture. Folk tales featured the animal as a friend or guardian of humans. Still, the yamainu retained the air of mystery humans have always ascribed to wolves. This may have been due to the species' vocalizations. These wolves howled for hours at a time, giving voice to a haunting wail that seemed far too loud to come from such a small animal. The indigenous Ainu referred to the yamainu as the "Howling God."

As Western-style farming and the keeping of domestic animals increased, the yamainu became less of a friend and more of a threat. By the late nineteenth century, the yamainu had, in many areas, reverted to the role of wolves everywhere—that of villain. It was hunted for its fur, because of the alleged threat it posed to livestock, and because of the danger posed by occasional rabid specimens. Villagers posted magical charms to ward off wolves or actively pursued the animals with traps, weapons, and poison. Governments placed bounties on wolves. As the species became rarer (and thus even less of a real threat), the persecution intensified—an illogical reaction which has occurred many times where wolves are concerned.

Officially, the last Japanese wolf was killed in 1905. At the site of this event, in Higashi-Yoshino Village in Nara Prefecture (one of the southernmost prefectures, or provinces, on the main island of Honshu), a requiem ceremony is carried out each year. The Japanese have exterminated their wolf, but not without regret.

Or have they? Occasional sighting reports have kept the question of the Japanese wolf's existence open for almost a century now. In 1934, for example, a group of farmers northwest of Hongu reported seeing five or six wolves in a pack. After World War II, sightings increased. According to forester and writer Ue Toshikatsu, this was to be expected if the wolf was still alive, since conscription and war reduced the population of rural areas and increased the numbers of wild game such as boar and deer.

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Sighting reports dropped off again in the late 1950s. Ue noted that, in this period, forests and wildlife were again under pressure from development. He suggested the wolf survived its presumed demise and began a modest comeback during and after the war, only to meet a final end around 1960.

In 1993, Yanai Kenji published his own story of how, as a 48-year-old mountaineer accompanied by his son and his co-worker, he was startled by a "horrible howling" while hiking toward Ryogami Mountain in 1964. Soon after hearing the howls, the party encountered a lone wolf. The animal watched them briefly, then fled, leaving the half-eaten carcass of a hare behind.

In March 1994, wolf enthusiasts hosted a conference in Nara. Over 80 professional and amateur researchers attended. Reports from 70 witnesses who had seen wolves or heard howls were discussed. An accompanying story in the *Nihon Keizai Shimbun* stated that a shrine in Tottori Prefecture, just northwest of Nara, was discovered in January 1994 to hold a relatively recent specimen of the yamainu. This animal may have been presented to the shrine as recently as 1950.

The largest number of modern sightings have come from the Kii Peninsula. This rugged, mountainous block of land projecting into the Pacific from the southeastern coast of Honshu was the last stronghold of the yamainu.

The most dramatic piece of recent evidence, however, came from central Kyushu. On July 8, 2000, school principal and amateur biologist Akira Nishida was hiking on a mountain trail when a canid about three feet in length emerged from the forest and passed within a few yards of him. Nishida was carrying a camera, and the quick-thinking teacher shot 10 pictures of what he believed to be a Japanese wolf. The aforementioned Dr. Imaizumi examined the pictures and said, "I cannot help but think that the animal is a Japanese wolf." Other experts were cautious about identifying the animal, but agreed the case deserved investigation. To date, there has been no resolution. An anonymous claim the animal was a released domestic dog has not been substantiated, but neither has the wolf identity.

Recent expeditions focused on the Kii Peninsula have produced no new evidence, despite trapping efforts and the playing of recorded Canadian wolf howls. Modern sighting reports that don't include photographs are hard to interpret. The days when wolves were common are beyond living memory in Japan, and some witnesses may be misidentifying dogs.

Folklorist John Knight suggests the wolf has become a symbol, or metonym, for the place the mountain forests once held in Japanese culture. Such forests were viewed as lands of mystery and danger. In short, the continuing interest in wolves exists because people want to believe the wildness, the mystery, is still "out there," despite the slender nature of the evidence. This may well be true, but it doesn't answer the question: is the wolf extinct, or are there nights when, on Japan's loneliest mountaintops, the voice of the Howling God can still be heard?

Acknowledgements

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Reviews

Histoire Naturelle des Dragons: Un Animal Problématique Sous l'Œil de la Science
by Michel Meurger
Terre de Brume, Rennes, 2001, 244 pp., softcover, 18.14 Euros, ISBN 2-84362-109-7

Reviewed by John L. Moore

Today, the dragon is the paradigmatic fabulous animal. Although many cryptozoologists gladly accept that plesiosaurs still lurk in dozens of lakes and mysterious hominids twenty feet tall stroll around northern forests, even they, for the most part, dare not believe that dragons ever actually existed. As Michel Meurger demonstrates in his new book, however, this was not always the case: for a long time dragons were thought to be real inhabitants of the mountains and forests of Europe.

Meurger begins his account of the natural history of the dragon in ancient Greece, where the word *drakon* was used for large colubrids and stories of large reptiles and winged snakes were confined to distant lands such as Africa and India. As time passed, however, the *drakon* acquired mythological attributes (such as large size, beards, and crests) and gradually these three types began to fuse to form the familiar image of the dragon. Toward the end of the Middle Ages, the dragon was relocated from exotic deserts to the wild places of central Europe, particularly Switzerland. Local chronicles began to feature reports of dragons, which were often associated with floods or other disasters, and folklore told of brave heroes who slew dragons and consequently allowed new areas to be colonized. Despite this frequent association with numinous events and places, the dragon was widely thought to be a natural member of the fauna.

With the Enlightenment, the dragon began to lose its power. Those who still thought it existed deprived the dragon of its more extraordinary attributes and reimagined it as simply an ordinary animal; perhaps it was a new kind of lizard, or perhaps a very old snake would metamorphose into a dragon. (Interestingly, a story about a "young dragon" is probably the first written account of *Proteus anguillaris*, a cave-dwelling salamander.) More and more persons began to deny entirely that it existed. Although interest in the dragon was reinvigorated by the discovery of dinosaurs and other such giant reptiles (which, some thought, might have survived long enough to coexist with the first humans), and later by that of the Komodo dragon (*Varanus komodoensis*), these effects did not last. By the 20th century, belief in the dragon had receded to the outermost fringes of the scholarly community, surviving mainly in the familiar accounts of the *Tatzelwurm* and the occasional report of a reptile flying around the Alps.

Meurger's account of this history includes extensive quotations from the original works by those who advocated the reality of dragons—including well-known scholars such as Conrad Gesner and Johann Jakob Scheuchzer—as well as numerous descriptions of purported dragon sightings. Although the text is accompanied by a number of illustrations, readers of Meurger's *Lake Monster Traditions* (with Claude Gagnon, 1988, London: Fortean Tomes) will be disappointed to discover that they are much less frequent than in the earlier book.

When reading this book, one is frequently reminded of the cryptozoological literature. The numerous eyewitness accounts of dragons reported by respectable citizens of unquestionable honesty (although often not recorded until years after the supposed encounter) would not seem out of place in a modern cryptozoology book. Some of the chroniclers and naturalists Meurger discusses also seem like today's cryptozoologists in their methods, with stories from folklore being reshaped to fit a zoological model. Meurger correctly denounces this approach, which he compares to that of Euhemerus, an ancient Greek writer who said that the gods were actually mortal kings whose fame had caused later generations to mistake them for deities.

While some might see the eyewitness testimony presented in this book as reason to resurrect the dragon, this is clearly wrong. We should not place too much faith in such reports, argues Meurger, because the memories of an event can be extensively reworked to fit traditional models before it is recorded—a person frightened by a large snake, for instance, can gradually add details from dragon folklore to their memory of the encounter. These effects may be seen in dragon accounts, which change over time in a way that clearly is culturally determined. Instead, Meurger's book should cause one to question the heavy reliance of modern cryptozoology on eyewitness testimony. If there are so many reports of dragons—a non-existent animal—and if so many could be convinced over the years that it actually existed, then why should we think that lake monsters or unknown hominids have any more basis in zoological reality?

Encyclopedia of the Sea
by Richard Ellis
Alfred A. Knopf, New York, 2000, 380 pp., hardcover, $35.00 (US), $53.00 (CAN), ISBN 0-375-40374-4

Reviewed by Ben S. Roesch

The sea is a large place, home to an almost unfathomable number of organisms, including ubiquitous fishes, sharks, and whales, as well as a myriad of equally amazing invertebrates and microorganisms. Beneath the sea's surface lie spectacular geological features, including enormous mountains (some of which emerge as islands), abyssal mudplains that extend uninterrupted for thousands of kilometres, and canyons and trenches that drop precipitously into the depths. The enormous volume of water covering this undersea landscape has been part of human history for thousands of years, involving wars, exploration, ships, pollution, and fishing. A *Brittanica*-sized encyclopedia could be written to cover all of these aspects of the world's oceans, but Richard Ellis, who as a literary and artistic veteran of marine natural history is well equipped to tackle such a project, presents a much more concise yet still extremely comprehensive and useful *Encyclopedia of the Sea*.

In his introduction, Ellis apologizes for having to omit many possible entries, but his rationale of selectivity is realistic for the scope of the book—he includes many of the big animals and then includes unusual or representative examples of lesser known animal groups. Thus, all the whales and dolphins and sea turtles are included, along with many sharks and cephalopods, and a large number of fishes (mainly those that have economic importantance, are commonly encountered by people, or are unusual). Invertebrates are treated in the same way, with entries for certain important or unusual species (e.g. lobster) as well as entries for larger taxonomic groupings such as crustaceans, arrowworms, and jellyfish. Algae and microgranisms are typically considered at a phylum level, with occassional more specific entries such as "kelp".

The physical aspects of the ocean, including hurricanes, tsunamis, tides, and turbidity currents, are also covered, as are geographical locations such as various islands, important nautical landmarks, bays, underwater features such as the Mid-Atlantic Ridge, and of course the different oceans and seas. Nautical topics are discussed, including entries on illustrious ships, many of which met unfortunate ends. Finally, there are numerous entries on various battles and famous seafaring people, including early explorers like Magellan as well as more recent explorers and scientists such as Robert Ballard and Eugenie Clark. There are several cryptozoological entries, including cryptozoology, the Loch Ness monster, coelacanth, Cadborosaurus, Steller's sea monkey, megalodon, sea serpent, and giant squid. There's not much here that most who are keenly interested in cryptozoology won't know already, but the entries are useful for quick reference.

The entries vary in length, but there are usually four or five per page; their length is generally sufficient, with a considerable amount of information packed into each. Ellis's prose is, as usual, excellent. The book is attractively designed and, as would be expected, the text is peppered with small but nice illustrations of sea life by Ellis (some old, some new). A section of colour plates of some of Ellis's spectacular paintings is included. No bibliography is present, but, as Ellis points out in the introduction, an encyclopedia doesn't necessarily need one and it would have cluttered the book.

In all, it is phenomenal how many entries Ellis has included in this ambitious book. It is probable that any entry on the sea that most anyone could think of is in here, as well as many more that will delight and inform. Of course, there are bound to be some entries that didn't make it. I was disappointed that Charles Darwin did not receive an entry—he, of course, proposed the theory of natural selection, went on a five year sea voyage around the world (there is an entry on the *Beagle*) and wrote an entire book on the formation of coral reefs (Darwin's general theory on coral reef formation remains supported today). I was also surprised that nematodes did not make the cut, as these little unsegmented worms are abundant and diverse throughout the oceans, on land, and inside the fishes, sharks, and whales that Ellis did include! For those inclusions that were not present, however, there are many equally important entries in this book. Richard Ellis's *Encyclopedia of the Sea* is a remarkable achievement and a wonderful reference.

The Kraken and the Colossal Octopus
by Bernard Heuvelmans
Kegan Paul Ltd., London, 2003, 332 pp., hardcover, $144.50 (US), ISBN 0-7103-0870-1

Reviewed by Ben S. Roesch

Although Bernard Heuvelmans, the late father of cryptozoology, wrote several books on cryptids, only his classics *On the Track of Unknown Animals* (1955) and *In the Wake of the Sea-Serpents* (1965) have been translated into English and other languages. The translation of the latter book contains a chapter entitled "The Kraken and the Giant Squid", a heavily abridged version of Heuvelmans' book *Le Kraken et le Poulpe Colossal* (1958). Kegan Paul now presents us with an English translation of this work in its entirety (with some revisions by the author as late as 1994), as part of an on-going but oft-delayed plan to publish all of Heuvelmans' books in English for the first time.

The first chapter provides a general introduction to the sea's ability to hide large unknown creatures and briefly discusses how octopuses and squid became first known to humans. Heuvelmans then discusses aggressive behaviour of octopuses, including fictionalized tales as well as first-hand accounts of attacks on humans, most of which were unsurprisingly instigated by the human participant. A short chapter on cephalopod taxonomy is dated but is still interesting for its historical approach. With introductory material covered, Heuvelmans launches into the history of the kraken and the giant squid, including chapters on the kraken in antiquity and medieval times, the growing attention given to the kraken by scientists, the eventual

description of the giant squid in the 19th century, and the specimens subsequently obtained in Newfoundland and elsewhere. An entire chapter is devoted to Pierre Denys de Montfort, a French naturalist who argued for the existence of the giant squid before physical evidence was available. The rest of the book is more cryptozoological, discussing the possibility of giant giant squid, supposed sightings of healthy *Architeuthis*, and the alleged giant octopuses of St. Augustine, Florida, and elsewhere. Heuvelmans' characteristic personal style is evident throughout the book, and there is much interesting hard-to-find material that testifies to Heuvelmans' extraordinary research abilities. An extensive bibliography is provided.

There is an eclectic and interesting mix of almost 150 illustrations of cephalopods, other animals, historical figures, and real and mythical encounters between man and cephalopod. Unfortunately, overall they are rather poorly reproduced; the photographs have low resolution. A bigger problem with the book is the lack of an index; surely with the book's high price Kegan Paul could have hired someone to make one. Despite the poorly reproduced illustrations and lack of an index, this long-awaited translation of a cryptozoology classic is a must-buy.

Mysterious Creatures: A Guide to Cryptozoology
by George M. Eberhart
ABC-Clio, Santa Barbara, California, 2002, 2 vols., xvii + 722 pp., hardcover, $185.00 (US), ISBN 1-57607-283-5

Reviewed by Ben S. Roesch

George Eberhart is a librarian known for his encyclopedic bibliographies on unusual phenomena. In this large two volume set, he focuses on cryptozoology in an ambitious effort to collate information on every cryptid and a number of mythical creatures (e.g., griffin, roc, dragon) that have been said to represent unknown and known animals.

There are over 1000 entries alphabetically organized, from "Abnauayu", a supposed hominid from west Asia, to "Ziz", a mythical giant bird of the Middle East. The relative obscurity of these two cryptids is representative of the book, which contains entries on many beasts that many cryptozoologists will know little about. Most of the cryptids are listed by their local name, making *Mysterious Creatures* an interesting reference to the animal folklore of indigenous peoples around the world. There are also entries on the better-known cryptids such as Nessie, bigfoot, and the gigantic octopus. Following the name of each cryptid is a brief sentence that describes what kind of cryptid it is and where it is found. Each entry is then broken into subsections including etymology, variant names, physical description, behaviour, tracks, habitat, distribution, significant sightings, a list of possible explanations, and a usually comprehensive list of references (admirably, often the original sources). Although this format allows quick reference and provides a good summary of each cryptid, it could be argued that it sometimes causes distortion of the actual nature of the supposed animal. For example, folkloric animals typically have varied attributes, some of which sound zoological and some of which do not; in Eberhart's descriptions, there is a tendency to focus on the animal-like characteristics.

Eberhart generally does a good job at including skeptical conclusions about cryptids in his list of possible explanations, which is admirable because many cryptozoologists ignore or give short shrift to such ideas. He also includes many of the credulous explanations for cryptids that certain cryptozoologists have proposed. These often fall into the category of prehistoric survivals, where cryptozoologists seem to simply browse palaeontology books and pick out an extinct animal whose appearance more or less matches the description of a cryptid. The inclusion of such explanations causes at least two problems: any given explanation may be the brainchild of a single cryptozoologist and might in fact be disputed by the majority of cryptozoologists, and these explanations come off as being no less plausible than other explanations that are actually much more likely, even when this is certainly not the case. These problems are not Eberhart's fault, however—it is the price to pay for an exhaustive presentation of an often overzealous field. *Mysterious Creatures* covers the best and worst of cryptozoology and in doing so, Eberhart performs a remarkable service to researchers: his book makes it easy to quickly look up reliably researched information on any cryptid—including the credulous explanations that plague cryptozoology—without having to paw through countless files and books.

There are several supplementary sections of varying usefulness at the beginning and the end of the book. A preface by chemist Henry Bauer discusses why he thinks cryptozoology is important and an introduction by Loren Coleman continues in the same vein, discussing what cryptozoologists try to do and how they try to do it. Eberhart provides a guide to the use of the book, and also outlines what a cryptid is and how cryptozoologists chase them. A brief definition of the field with etymological notes and Jack Rabbit's informative article "Native and Western eyewitness testimony in cryptozoology" (reproduced from *The Cryptozoology Review* vol. 4 no. 1) are also found in volume 1. At the end of volume 2, there is a nice annotated and roughly taxonomic list of "Animals discovered since 1900", as well as a useful referenced and annotated list of all lake and river monsters worldwide, organized geographically.

There are over 80 illustrations, many of which have been reproduced from antiquarian-type works. Several newer, fanciful

paintings and drawings of cryptids by Bill Rebsamen and others as well as a number of classic and less famous photographs of cryptids are also present. A few of the cryptid illustrations are too cartoonish for my liking and should have been omitted (e.g. "Tahoe Tessie" on p. 533). Two excellent indexes of geographical locations and cryptids allow quick reference.

Eberhart's comprehensive and informative treatment of cryptids makes *Mysterious Creatures* an invaluable reference. It is of great use and enjoyment to anybody interested in cryptozoology, but due to its hefty price it may be restricted to the shelves of serious cryptozoological researchers. For them, however, *Mysterious Creatures* is essential.

The First Fossil Hunters: Paleontology in Greek and Roman Times
by Adrienne Mayor
Princeton University Press, Princeton, New Jersey, 2000, xx + 361 pp., softcover, $17.95 (US), ISBN 0-691-08977-9

Reviewed by John L. Moore

In this book, Adrienne Mayor argues that the ancient Greeks and Romans knew of large vertebrate fossils. These bones were often interpreted as the remains of legendary heroes or giants, or as those of monstrous animals. In these ancient efforts to explain fossils, Mayor thinks we see the birth of paleontology.

Mayor begins by reviewing her idea that legends of the griffin are based on the discovery of dinosaur fossils in the Gobi Desert such as *Protoceratops*. Although this view has been widely discussed and accepted, it is less convincing than many other cases discussed in this book. The argument is entirely circumstantial, since the ancient Greeks never travelled deep enough into central Asia to come close to the fossils that supposedly inspired the griffin, and those people who might have seen the fossils left no written records. Even if Mayor's reading of the literary evidence is correct, it is not clear that the legends about the griffin were not added on to an earlier mythical animal (as she indeed notes), because griffins appear in the art of ancient Mesopotamia and Egypt more than two thousand years prior to their first mention in Greek texts.

Most of the book is devoted to discussion of fossils found by the classical peoples themselves. Mayor shows that Greek and Latin texts contain many references to the discovery of giant bones. Because modern work has shown that large vertebrate fossils (often Neogene or Quaternary mammals) are found in many of the locations where ancient authors reported the finding of large bones, many of these accounts probably do refer to fossil discoveries. Furthermore, Mayor cites several discoveries of fossil specimens in ancient Greek and Roman sites by modern archaeologists. She also argues that an ancient Greek vase showing a monster being fought by Heracles and Hesione was inspired by a fossil mammal skull.

Nevertheless, some of Mayor's interpretations are problematic. Sometimes it is not clear that a bone discovered must have been a fossil; for instance, a bone which a fisherman caught in his nets and which was explained as the shoulder blade of Pelops could have been from an extinct mammal (mammoth bones have been found in this way), but it could also have been from a whale. Mayor also sometimes interprets references to fabulous animals as being connected with fossils even when there is no direct evidence for this, such as stories about dragons in India which were hunted for stones in their heads. Mayor explains the stones as calcite crystals on the fossil skulls of Siwalik mammals, but the belief that dragons or toads have precious stones in their heads is widespread.

It is interesting to see in this book how fossils were used to support belief in monsters and giants. Many accounts are quoted that bring cryptozoological events to mind: sea monster carcasses found on beaches, a satyr found asleep by soldiers, a dead centaur preserved in honey. As they would today, these and similar reports elicited a wide range of opinions in antiquity, ranging from credulous acceptance of every tale to overzealous debunking like that of Palaephatus, who wrote a book offering outlandish explanations of the "true" origin of various legends.

This fascinating book makes it clear that the ancient Greeks and Romans knew of fossil vertebrates preserved in the areas where they lived. Although it is not clear that these fossils actually lie at the origin of the myths about giants and monsters that were used to explain them, they did support the legends by seeming to give them physical proof. Those who would see an unknown animal behind every fabulous beast would do well to keep this in mind.

Bigfoot Sasquatch Evidence
by Grover S. Krantz
Hancock House, Surrey, British Columbia, 1999, 348 pp., softcover, $24.95 (CAN), $17.95 (US), ISBN 0-88839-447-0

Reviewed by Ben S. Roesch

The late Grover Krantz was a sasquatch researcher who was well-qualified to investigate claims regarding giant primates galavanting in the backwoods of North America. A physical anthropologist by training, he was involved in sasquatch research for over 25 years, and published several interesting papers. The culmination of his research was this book—originally published as *Big Footprints* in 1992, and now reissued under a different title and with a new addendum.

The main chapters are unchanged from the original edition. After an introduction, Krantz launches into two long chapters on footprints and their anatomy. These are interesting and I like the fact that much of Krantz's sasquatch research relies on physical material rather than eyewitness testimony. The Patterson film receives an in-depth analysis in another chapter. Krantz concludes that the footage is not a hoax and shows a real sasquatch. I am not totally convinced, but Krantz's analysis is interesting and remains one of the better treatments of the film. Another chapter details non-footprint sasquatch evidence—hair, feces, and other traces. Krantz also writes a chapter about the possible biology and life styles of the sasquatch. Although speculative and often not supported by a great deal of evidence, it is fun to read, if one sees it with a skeptical eye.

In a chapter called "The Fossil Record", Krantz states that the sasquatch is probably a species of the supposedly extinct giant ape *Gigantopithecus*. I think this conclusion may be premature, and all depends on how one reconstructs the life-appearance of *Gigantopithecus*. The problem is that there is little fossil material of *Gigantopithecus*—just jaw fragments and teeth. Some scientists think the creature was more like a giant gorilla, mostly walking on all fours, rather than a bipedal primate. Krantz hypothesizes that it was bipedal, making it a better candidate for the sasquatch.

Another chapter focuses on mystery primate reports from elsewhere in the world. Krantz is critical of "splitters" who think there are many species of giant unknown primates worldwide; he concludes that there is only one and that it ranges from North America into Asia. In the addendum (new to this edition), however, Krantz revises his view, stating that there are probably three mystery primates in existence: a type of orang-utan-like primate in China and Indonesia (the yeren and sedapa or orang-pendek), a *Gigantopithecus* (the sasquatch), and a human-like primate from central Asia (almasty). I think this outline is more acceptable than Krantz's old single species view, if we accept the available evidence. Two other chapters discuss the hunters and scientists behind the search for the sasquatch. Krantz's insider look at the various personalities involved in sasquatch research is entertaining and informative.

The 45-page addendum is a very good addition. It is presented as a chapter-by-chapter update, including corrections, of the original material. I would have preferred a completely revised book, rather than the tacking on of an update at the end. However, I understand time and publishing constraints, which are all the more significant considering Krantz's recent passing. It is quite interesting to read what Krantz originally wrote and then see what happened since then, and how his views changed. Three journal articles—two by Krantz and one by anthropologist Roderick Sprague—are reproduced as additional appendices. The two by Krantz are from *Cryptozoology* and *Northwest Anthropological Research Notes* and deal with reconstructing *Gigantopithecus* from skeletal material and assigning the sasquatch to that genus, respectively. Sprague's piece is an editorial from *Northwest Anthropological Research Notes* on John Green and various aspects of sasquatch research.

Finally, a short but useful bibliography and a good index are present. Many illustrations supplement the text, including line drawings, maps, graphs, and many photographs of skulls and bones, people, and tracks.

This book is well worth buying. If you already own the original edition of this book, it is still worthwhile to purchase it for the new afterword, especially if you are interested in sasquatch research.

In Search of Giants: Bigfoot Sasquatch Encounters
by Thomas Steenburg
Hancock House, Surrey, British Columbia, 2000, 256 pp., softcover, $19.95 (CAN), $16.95 (US), ISBN 0-88839-446-2

Reviewed by Ben S. Roesch

For over 20 years Thomas Steenburg has been researching sasquatch reports from western Canada. This book is his third and presents an update on his research. It consists mostly of reports and interviews that Steenburg has collected, which are interesting to read and for which he always provides good commentary. A long chapter on sasquatch sightings in Alberta is included, where Steenburg has done pioneering research. After reviewing the many reports he has collected, Steenburg sums everything up by comparing the various details of each sighting (e.g. time of day, time of year, height and hair colour of the described animal) in two chapters called "British Columbia Statistics" and "Alberta Statistics". There is also a good chapter on "Mistaken Identity and other Errors" in which Steenburg shows some of the ways eyewitnesses can be fooled into thinking they have stumbled across sasquatch evidence.

There are no references or index, but this is not highly problematic as the book is largely comprised of Steenburg's own research and specific cases can generally be found easily. I really liked the large number of black-and-white photos that illustrate the book; perusing the photos and reading the captions is informative and entertaining. Some sketches drawn by eyewitnesses are also provided.

Steenburg's writing style is at times a bit rough, but is still very readable and gives an enjoyable personal feel to the book. One obtains a genuine sense of Steenburg's dedication and enthusiasm for his subject, and readers will get a good idea of the sometimes complex process of investigating cryptozoological

reports in the field.

I particularly enjoyed Steenburg's serious approach, with little credulity and a constant rejection of the lunatic fringe (a short chapter on this topic is entertaining, with several amusing anecdotes). There is obviously a reliance on eyewitness testimony in the book, but Steenburg consistently notes this and explains the problems associated with using this kind of evidence to support the existence of the sasquatch. He also is not afraid to say that he is not convinced by certain reports and that some of them don't tell us anything substantial.

Steenburg provides a well thought-out conclusion to his book, in which he recognizes science's need of a body to prove the existence of the sasquatch. He concedes that eyewitness evidence may be circumstantial, but adds that it still points to a mystery that is worth further investigation. This sort of clear-headed approach to the sasquatch question is admirable and resonates through Steenburg's book, which is worth reading.

The Lost World of the Moa: Prehistoric Life of New Zealand
by Trevor H. Worthy and Richard N. Holdaway
Indiana University Press, Bloomington, Indiana, 2002, 760 pp., hardcover, $89.95 (US), ISBN 0-253-34034-9

Reviewed by Ben S. Roesch

This thick, well-illustrated book is an extensive review and synthesis on the evolution and biology of the Quaternary fauna of New Zealand. One chapter is devoted to reptiles, amphibians, and mammals, including criticisms of the supposed New Zealand origin of the giant gecko (*Hoplodactylus delcourti*) and an interesting if short section on the tuatara (*Sphenodon punctatus*). The rest of the book concerns the spectacular variety of New Zealand's extinct birds. Three chapters on the moa discuss its paleontology, biology, and history of fossil discoveries. This coverage represents the single best review of what is known about moa. Other chapters discuss kiwi, waterbirds, rails, parrots, oceanic birds, and my favourite, the giant moa-hunting Haast's eagle (*Harpagornis moorei*). The section on Haast's eagle also includes a fascinating discussion on the functional morphology that allows raptors to capture large prey. Introductory material on New Zealand's paleontology and biogeography is provided. The final chapter deals with the question of how and why much of the New Zealand avifauna went extinct. The coverage of these topics is remarkably thorough and well-referenced. The text is academic but readable. A fabulous index allows quick reference.

The presence of many photographs and illustrations adds greatly to the value of the book. Numerous classic lithographs are included, and many of the illustrations are rare or previously unpublished. All of the illustrations are well-reproduced, in large size. Tables and figures of scientific data, reproduced from previous papers or newly compiled, will be useful for reference purposes. For serious researchers, the appendices include a referenced list of the Holocene New Zealand avifauna, a key to the major limb bones of moa, and distribution maps of a selection of species on South Island.

Modern-day survival of moa, a popular cryptozoological topic, is only mentioned in passing. As the authors discuss, all available scientific evidence strongly suggests that moa went extinct at least 300-400 years ago. There are interesting discussions of Maori stories about interactions with moa peppered throughout the text. Possible late survival of Haast's eagle (*Harpagornis moorei*) is covered briefly, including interactions with the first human settlers, who may have had to worry about predation by these large raptors.

But this is not a book about whether these birds have survived—it is a remarkable work on how they lived and why they are no longer alive. For anyone interested in moa and other New Zealand avifauna extinct or extant, this book is essential.

The Loch Ness Monster: The Evidence
by Steuart Campbell
Prometheus Books, Amherst, New York, 1997, 128 pp., softcover, $19.00 (US), ISBN 1-57392-178-5

Reviewed by Andrew D. Gable

Steuart Campbell's *The Loch Ness Monster* is a fine example of what cryptozoology should be. The book mixes a bit of open-mindedness with a healthy dose of good old-fashioned skepticism. The end result is a critical examination of the mythology (and based on much of the evidence in this book, I stress "mythology") surrounding the titular beast, one of the modern world's "mega-monsters."

The first chapter examines the place of "Nessie" within the context of Celtic mythology and dispels popular myths about the lake (such as the supposed underwater openings to the sea). It also includes a discussion of various visual conditions at the lake which could account for false sightings—not only the well-attested phenomenon of standing waves, but also more mundane explanations such as swimming animals and even plant debris.

The second chapter begins the examination of the evidence for the monster's existence. Beginning with the account of St. Columba's A.D. 665 encounter with the monster (which Campbell aptly explains as religious parable), it examines some of the more representative eyewitness sightings of the monster

(conveniently split into categories by tentative explanation), from 1871 to 1979.

Next up are the photographs of the monster, from Hugh Gray's 1933 picture to the recent photographs of Tony Shiels (1977) and Jennifer Bruce (1982). The next section examines the films purporting to show the monster on the surface of the lake, from the previously unknown (to this reviewer, anyway) 1930s films, to the most recent (a 1983 film by a certain "para-cryptozoologist" who shall remain nameless), with a lengthy analysis casting doubt on the famous 1960 Dinsdale film.

The next section deals with underwater photographs of the monster, the only ones known to exist being those from the 1972 and 1975 expeditions of Robert Rines and the Academy of Applied Science. Campbell casts serious doubt on the Nessie-as-plesiosaur theory by pointing out that Rines's "rhomboid flipper" photo doesn't mesh with the flipper shape possessed by plesiosaurs. The unenhanced versions of the "rhomboid flipper" photographs are reproduced, and there is a discussion of the controversy sparked when Alan Gillespie, the Jet Propulsion Laboratory technician who performed the enhancement, stated that the photos publicized by the expedition were not what resulted from his enhancement and alleged that Rines had retouched the photos.

Finally, there is a consideration of the sonar evidence for the monster, some of which is genuinely mysterious. There follows a discussion of other allegedly monster-haunted lakes, including a few more in Scotland, Ireland, Scandinavia, Iceland, North America, and even Japan. Campbell ends with musings on the meaning of the evidence (or lack thereof, as this book demonstrates), which leads him to conclude "there is absolutely no reason why anyone should believe in lake monsters."

Some readers may be discouraged by the lack of mystery about the case as presented here. Most every sighting, film and photo is explained away, although most of the explanations are quite logical. This book is an essential part of any serious, non-credulous cryptozoologist's library.

Also Received (by Ben S. Roesch)

The Private Life of Sharks
by Michael Bright
Robson Books, London, 1999, 285 pp., softcover, £8.99 (UK), $17.00 (US), ISBN 1-86105-3142

In *The Private Life of Sharks* Michael Bright presents much interesting material on recent shark research that many readers will not be familiar with. This makes predictable chapters dealing with anatomy and physiology, feeding, reproduction, shark attacks, and the great white shark, interesting to read. The other three chapters offer a refreshing change from typical shark book fare, discussing shark migrations, shark schooling, and deep-sea sharks. A chapter-by-chapter bibliography suggests further reading.

Following a good discussion about recent research on *Carcharocles megalodon*, including the debate on how closely related it is to the great white shark, Bright dabbles in the idea that the beast survives today. He is too cautious in criticizing the idea that *C. megalodon* survives. Bright discusses the oft-reproduced 1918 Port Stephens fishermen's report, and mentions a supposedly true story from the *Weekly World News* about a Soviet submarine that was attacked by a giant shark. Bright expresses skepticism of the latter story, but it should not have been included because American tabloids are notorious for their make-believe tales. Bright also brings up a report of a cleanly severed whale shark tail with many teeth marks in it that washed up on a beach on the Red Sea. Bright admits that whale sharks are often struck by boat propellers but states rhetorically "[w]hether [the bites] were made before or after the big cut cannot be ascertained." Clearly, the discovery of a severed whale shark tail does not imply that *C. megalodon* survives and probably in fact is the result of a boat collision and subsequent scavenging by sharks. Ignoring these speculative bits, Bright's book is good reading for anyone wanting an introduction to shark biology and recent advances in the field.

In Search of Ogopogo: Sacred Creature of the Okanagan Waters
by Arlene Gaal
Hancock House, Surrey, British Columbia, 2001, 208 pp., softcover, $14.95 (US), $16.95 (CAN), ISBN 0-88839-482-9

Arlene Gaal has published several books on the ogopogo. This is her latest contribution, presenting many new sightings and video/film evidence, as well as discussions of the various searches for ogopogo. An insert of colour photos is present, including video stills and photographs purporting to show ogopogo. I think most of them show sticks, birds, and waves, but they are still interesting to see. Another set of photographs shows a large fish-like carcass that washed up in Quebec. Gaal suggests that it may have been a sturgeon, and I agree, although certainly it was a very large individual, making the photographs of special interest. Several black and white photos and illustrations supplement the text. One of them shows a carcass, washed up in Santa Cruz, California, in 1925, that has been touted by cryptozoologist as being an unknown animal. Gaal compares its head to a sketch provided by an ogopogo eyewitness. However, the 1925 carcass was later identified as a Baird's beaked whale (*Berardius bairdi*) by M.E.M. Davidson in a paper in *Journal of Mammalogy* (vol. 10, pp. 356-358).

A useful and complete chronology of sightings of ogopogo is provided as an appendix, from the earliest accounts through

January 2001. My main complaint with the book is that, although the many eyewitness accounts collected by Gaal do not require references, a number of other sources are given without specific bibliographic details. Although I do not share Gaal's conclusion that ogopogo exists, this book is interesting and will be useful for those interested in lake monsters.

Quest for the African Dinosaurs
by Louis Jacobs
John Hopkins University Press, Baltimore, 2000, 316 pp., softcover, $17.95 (US), ISBN 0-8018-6481-X

Palaentologist Louis Jacobs has written a fascinating account of his dinosaur digs in Africa. Originally published in 1993 and now in paperback with a new introduction, *Quest for the African Dinosaurs* is both a travel journal and a work of popular science, emparting a true feel for scientific field work. It is useful because few books have examined dinosaur palaeontology in Africa. Jacobs also covers other Mesozoic fauna such as crocodiles, early mammals, and pterodactyls, and there is much information on African natural and cultural history. Of particular interest to the cryptozoologist is a chapter entitled "A Living Dinosaur?", but those who favour a dinosaur identity for the mokele-mbembe will be disappointed. Jacobs criticizes the idea of living dinosaurs and points out the fallacy of using the coelacanth's modern existence as an analogy for dinosaur survival. He also dismisses the notion that the rain forests of central Africa have remained unchanged since the time of the dinosaurs. This chapter is a must-read for those who continue to promulgate the idea of living non-avian dinosaurs.

Borderlands
by Mike Dash
Arrow Books, London, 1998, 518 pp., softcover, £6.99 (UK), ISBN 0-7493-2396-5

In this book, Mike Dash, former publisher of *Fortean Times*, delves into wide-ranging fortean topics such as spontaneous human combustion, UFOs, conspiracies, mysterious disappearances, frog falls, ball lightning, and cryptozoology. These are weird, fascinating topics that are too often distorted and robbed of any sense by authors with poor writing, thinking and research skills. Dash provides the antithesis: his book is entertaining, well-written, and well-researched. I appreciate his level-headed and open-mindedly skeptical approach. A chapter on cryptozoology deals with British mystery cats, the mapinguary, the sasquatch, mokele-mbembe, giant snakes, sea serpents, the Loch Ness monster, and other topics. Dash does not just rehash old stories but adds thoughtful commentary on the problems with cryptozoological evidence and practice. Cryptozoology creeps into other discussions in the book, such as an interesting chapter on the nature of fortean evidence. Aside from the readable and informative text, two inserts of black and white photos are included. Extensive notes for all chapters are provided, including references. This book is well worth a read.

Unexplained Phenomena: A Rough Guide Special
by Bob Rickard and John Michell
Rough Guides, London, 2000, 390 pp., softcover, $19.95 (US), $27.99 (CAN), ISBN 1-85828-589-5

This book is not a travel guide but rather an amalgamation of Bob Rickard and John Michell's out-of-print fortean classics *Phenomena* (1978) and *Living Wonders* (1982). Some content has beeen updated. Most of the book deals with non-cryptozoological anomalies such as UFOs, ghosts, rains of fishes and frogs, crop circles, unusual human abilities, and hysterias. Cryptozoology is covered in a chapter entitled "Monsters" which discusses lake monsters, sea serpents, globsters and other supposed sea serpent carcasses, man-eating trees, hairy hominids, wild people, black dogs, and even werewolves. Another chapter covers strange animal behaviour, including a section on abductions of humans and livestock by birds of prey. The authors tend not to form conclusions, leaving that to the reader. Because the cryptozoological content provides useful summaries and contains some information that is hard to find elsewhere, I recommend this book, especially for those with an interest in strange phenomena as a whole.

China's Major Mysteries: Paranormal Phenomena and the Unexplained in the People's Republic
by Paul Dong
China Books, San Francisco, 2000, 227 pp., softcover, $16.95 (US), ISBN 0-8351-2676-5

Most of this book, which was originally published in 1984 and is now reprinted with a short addendum, concerns paranormal topics such as UFOs, psychics, and qi gong (a Chinese breathing technique that supposedly develops paranormal abilities). These are treated with less skepticism than I feel is warranted. Of more interest are three chapters (comprising 31 pages) on the wildman, China's equivalent of the sasquatch. The first chapter recounts a number of eyewitness encounters with the wildman, including three cases from the late 1970s. The second chapter outlines the searches led by Chinese scientists for the wildman. Probably the best of the three chapters is one on Zhou Guoxing, an anthropologist at the Beijing Natural History Museum who is well known for his scientific approach to the wildman phenomenon. This chapter includes an interesting interview with Zhou. Regrettably, the book contains no references.

Most of the above books can be purchased on-line, often at a substantial discount, at www.ncf.ca/~bz050/czbooks.html.

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Contributors for this Issue

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Andrew D. Gable is 27. A resident of Pennsylvania, he has a keen interest in "Ripperology", as well as mythology, and both conventional and crypto- zoology.

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Charles G.M. Paxton is a fisheries ecologist at the University of St. Andrews, Scotland. In his spare time he is writing a book on sea monsters but he isn't sure if he is a cryptozoologist or not. His research interests are aquatic animal diversity and abundance estimation, fish behaviour and the ecology and evolution of giant fishes. He is also interested in epistemology and promoting the awareness of science as a method. E-mail: charles.paxton@virgin.net

Ben S. Roesch is a M.Sc. candidate at the University of Guelph, Ontario. He is conducting research on comparative biochemistry and physiology of marine and freshwater elasmobranchs. He is interested in marine biology (particularly sharks), deep-sea biology, environmental and comparative physiology and biochemistry, the evolution of metabolism, and science as a whole. He also enjoys the wonders of punk rock, the guitar, scuba diving, mountain biking, and surfing.

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On the cover:
Section of a map drawn by Hans Egede showing an animal "shaped at the rear like a serpent" that he saw off the coast of Greenland in 1734 (P. Egede 1741).